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JUNE 24, 1968

RAILWAY AGE

THE TRANSPORTATION WEEKLY

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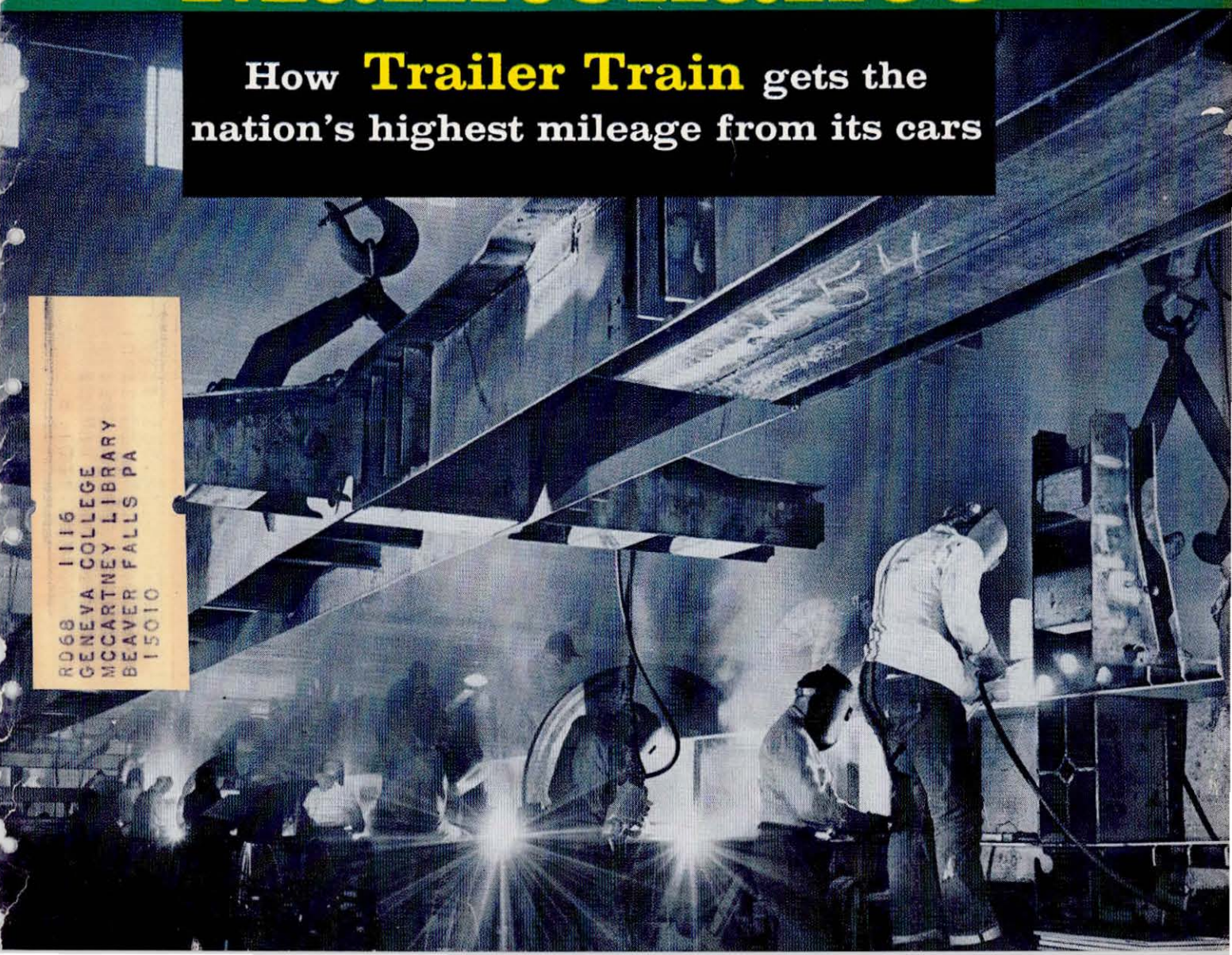

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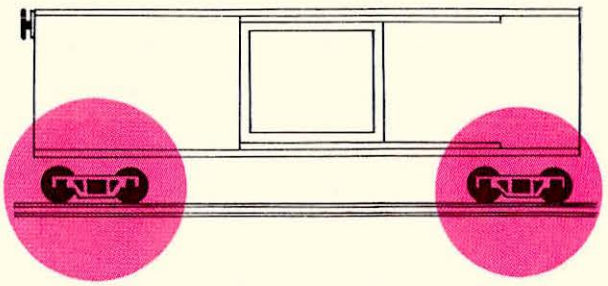

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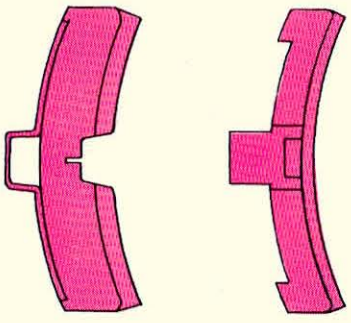

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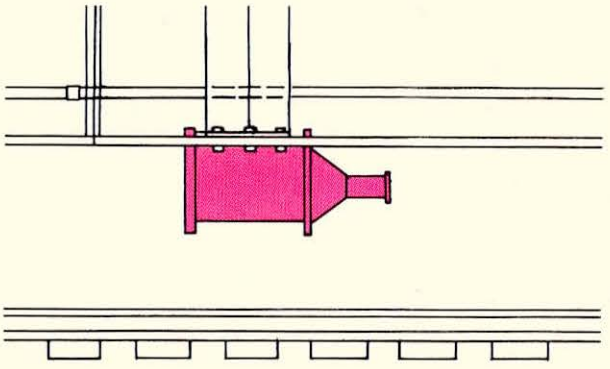

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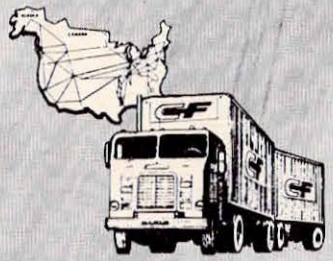

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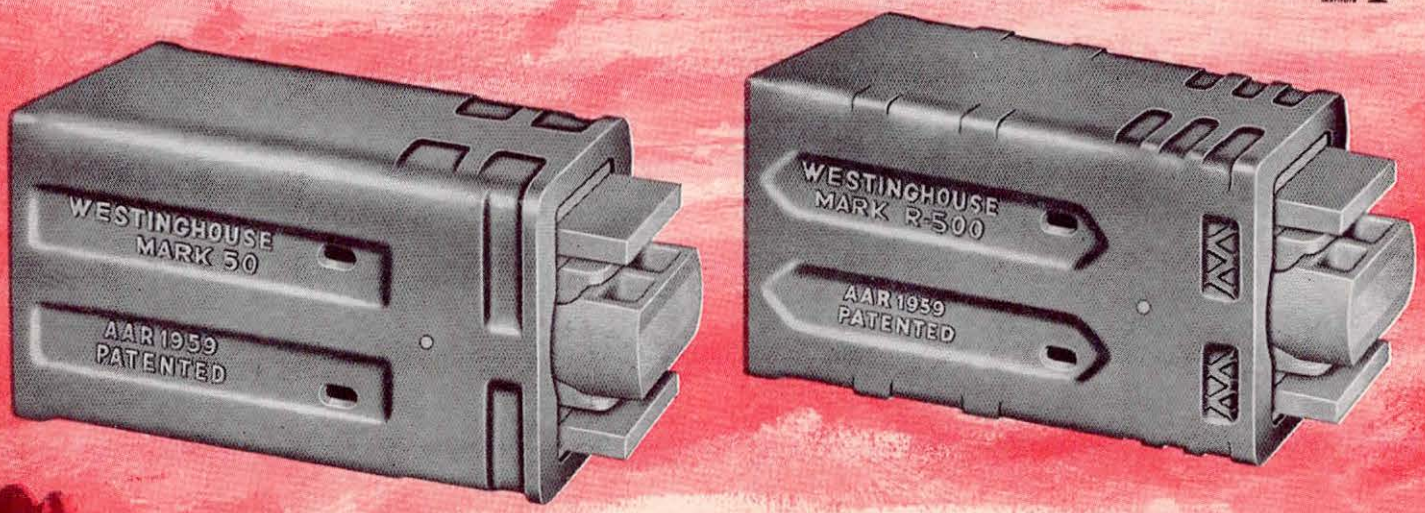

RAILWAY AGE

June 24, 1968 • Vol. 164, No. 24

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. . . AND COMING NEXT WEEK

It's a long, long time from July to December. What's ahead? How will the railroad industry fare? What influences, inside and outside the industry, will bear on the situation? In the next issue, Railway Age will take a look ahead —based on the thinking of top railroad management. (This will be a two-in-one issue, dated July 1/8 and mailed July 5.) Another mid-year report will highlight developments in transit, such as changes in direction for the Institute for Rapid Transit, and what is happening in cities around the country.

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INDEX PAGE

Railway Age, established in 1856, is indexed by the Business Periodicals Index, the Engineering Index Service and the Public Affairs Information Service. Name registered in U.S. Patent Office and Trade Mark Office in Canada.
Published weekly (except for four issues combining two-in-one) by the Simmons-Boardman Publishing Corporation at 440 Boston Post Road, Orange, Conn.
Railroad employees' subscription rate, U.S. possessions, Canada and Mexico, $6 one year, $9 two years, all others $15 for one year, payable in advance and postage paid. To railroad employees elsewhere in the western hemisphere, $10 a year. In other countries, $15 a year. Single copies, 60¢ except special issues. Address all subscriptions, changes of address and correspondence concerning them to Subscription Dept., Railway Age, Emmett St., Bristol, Conn. 06010.
Change of address should reach us three weeks in advance of next issue date. Send old address with new, enclosing, if possible, your address label. Post Office will not forward copies unless you provide extra postage.

Circulation Dept.: John Rogers, Director of Circulation, 30 Church St., New York, N.Y. 10007. POSTMASTER—SEND FORM 3579 TO EMMETT ST., BRISTOL, CONN. 06010.
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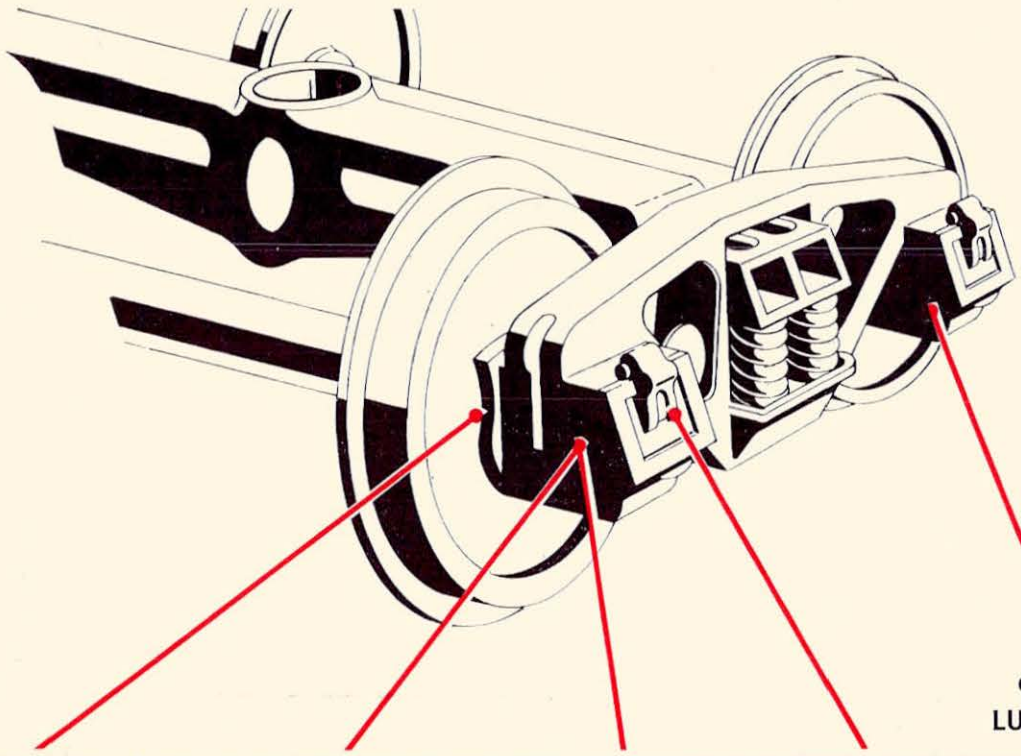

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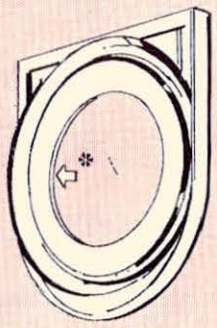

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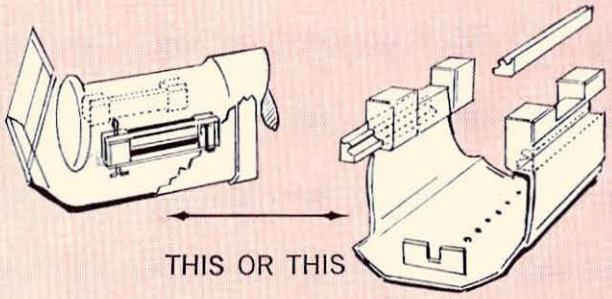

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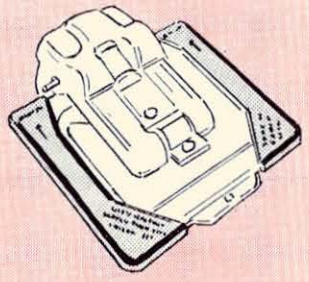

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SHORT AND SIGNIFICANT

Erie Lackawanna plans major track upgrading

A $24-million track maintenance program is now being undertaken by the Erie Lackawanna—a project larger than any conducted by the previous company in its nearly eight years of existence. John P. Fishwick, who became E-L chairman and chief executive officer when the road was taken over by Norfolk & Western in April, said the program includes: installation of 97 miles of rail, of which 62 miles will be welded; laying of 375,000 crossties; raising of 829 miles of track; and spreading of 469,500 tons of new stone ballast. In addition, said Fishwick, 12 gangs of seven men each will be renewing a total of 352 grade crossings on the line between Hoboken, N.J., and Chicago. The road expects to hire an additional 670 men to work on the program through October.

Reservations for Railway Age tour being accepted

Reservations can now be made for space on the Railway Age Pan American tour in November—a two-week trip that combines technical meetings with top-flight Latin-American railway officials and sightseeing in some of the most colorful cities and mountain scenery anywhere. Highlight of the trip is the Pan American Railway Congress in Buenos Aires, with other stops in Rio, São Paulo, Lima and three points in Colombia. Optional excursions from Lima through the Andes to Machu Picchu and Cuzco or to the Amazon headwaters are available. Departures are from either New York or Chicago on Nov. 6 (after the election) and return is Nov. 23 (before Thanksgiving). For more information, contact Associate Editor Joe Asher, 30 Church St., N.Y. 1007.

Boyd urges hiring of more jobless youth

The Department of Transportation plans to hire more than 1,700 disadvantaged young people this summer, and DOT Secretary Alan S. Boyd has urged the transportation industry to follow DOT's example. "Management may say, 'What can I do with these youngsters?'" Boyd said "the answer is that you can hire them—give them training. You can start equipping them for a tomorrow that has promise. You will find, later, that hiring these youngsters will pay dividends in the form of loyal and dependable employees. The future of America's transportation industry is bright and exciting. I urge you to let these youngsters share in that future."

Barge lines get one-year reprieve on mixing rules

Barge lines operating on inland waterways may continue until July 1, 1969 their present commodity mixing practices without taking on additional regulation. The ICC has postponed again the effective date of its eight-year-old ruling which holds that the Interstate Commerce Act's bulk commodity exemption is lost when barge loads are added to a tow under circumstances which result in making the assembly a mixture of bulk and non-bulk shipments. The further reprieve from the Commission had been expected after it had been requested by interested Congressional committees which are considering legislation to give the barge lines permanent relief (RA, June 17, p. 27).

GATX expands repair service for tank cars

All nine GATX tank car division shops now will provide repair and maintenance service to all owners of tank cars, according to Charles E. Coyl, vice president and division general manager. "Expansion of our services . . . has been made possible by our investment in new equipment for our shops and extensive modernization of our own tank car fleet," Coyl says. Now 40% of GATX's 54,000 tank cars are under 10 years old, and this means facilities are less burdened. Also, the flexibility offered owners by GATX locations is expected to reduce repair costs.

MONDAY MORNING REPORT

SHOULD RAIL MEN BE REFUSE MEN?

In plain words, it was a talk about garbage. But the recent Railway Systems & Management Association program about waste management produced leftovers that can lead rail men to fresh dollars. The realm of waste can grow as much as anyone wants—to junk, trash, garbage, sewage. The heap will grow as much as everyone wants. And RSMA says rail men should look for new gold in that old junk.

CITIES CRY FOR HELP

The RSMA meeting was a megaphone for a cry from the cities. Why they cry can be seen from researchers' reports. Urban Americans (more than 70% of the U.S.) now generate a daily average of 4.5 pounds of refuse apiece. That totals 140 million tons a year, altogether. Because of bigger production and higher living standards, each urbanite by 1970 will put out 4.8 pounds a day, for an annual group total of 190 million tons. By 1980, it will be 5.5 pounds and 260 million tons. The problem is simply that current disposal tactics—incineration and land fill—will not grow accordingly. They can't. Cities do not have enough space or money to keep up. As a result, in Chicago, for one example, "this crisis has precipitated a serious and exhaustive study of the rail-haul process of waste disposal," says James B. Fitzpatrick, Streets & Sanitation Commissioner.

RAILS CAN ANSWER THE CRY

Railroads have space the cities need. For pick-up stations strung through the city, as well as for land fill. And instant expandability and permanence. And a factor of decreasing costs with increasing business. Fitzpatrick says disposal involving rail transport is competitive in price with present practices. Consider air pollution. For one incinerator alone, which will be Chicago's fourth, pollution controls will cost more than one million dollars. With the rails, that would not be needed. The Chicago project under study includes rail-haul of already-compacted waste blocks to many sites. Rails, however, could tackle the opportunity two other ways. Besides merely moving the stuff, they could do the entire job by building transfer and disposal plants, or they could act as middle men and "farm out" the non-haul elements.

STOP EFFLUENCE, STAY AFFLUENT

Consider just hauling. In 1980, if rails haul half of the waste output at one suggested rate—$3 per ton—their revenue will total $390 million. Whatever method railroads choose, there is also the potential of gain from waste reprocessing to be considered. All these factors pile up to form a clear RSMA message: Rails indeed can make money by keeping the affluent society from becoming an effluent one.

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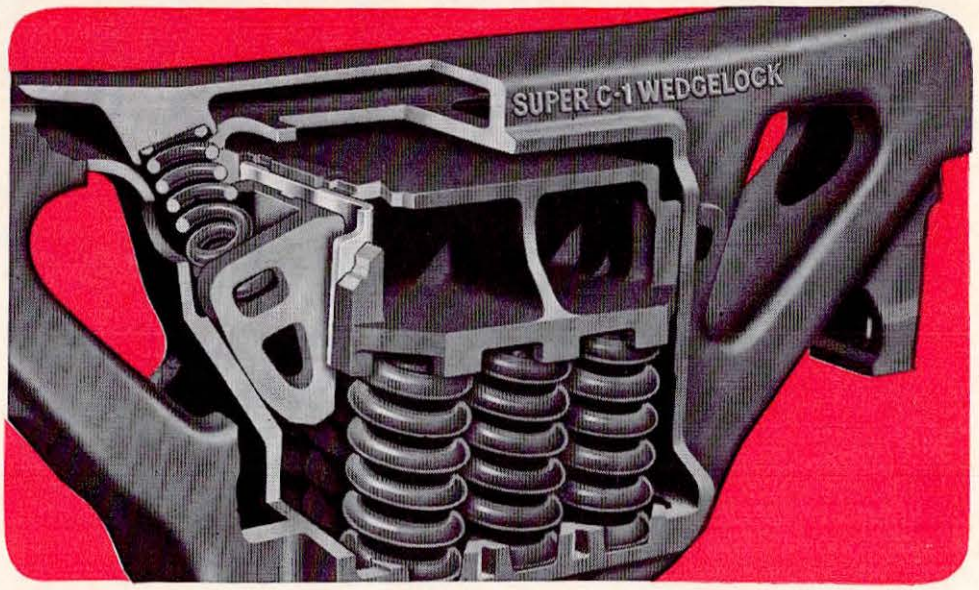

National Super C-1 Trucks are A.A.R. Approved

Important design evolution: Rather than accomplishing the interlock between bolster gib and sideframe columns, Super C-1 provides this connection between wear plated bolster wedge shoulder and fail-safe hardened wedge. This Wedgelock feature also reduces out-of-squareness (parallelograming) approximately 25%, thus decreasing wheel flange wear rate. Increased lateral movement of Super C-1 bolster is possible due to near-elimination of bolster gib and frame column contact. The lateral built into Super C-1 Trucks equals total lateral obtained in integral box type trucks using plain bearings. Super C-1 ride is smoothed substantially through selective snubbing control without need for any auxiliary devices. Lateral contact surfaces, more than one quarter larger than on any other truck, greatly reduce wear and increase service life. 500% increase in bearing areas of bolster end sides and frame column surfaces limit bolster rotation. Reclamation, if ever necessary, involves replacement of L-shaped wear plate without weld build-up on bolster gibs and frame columns.

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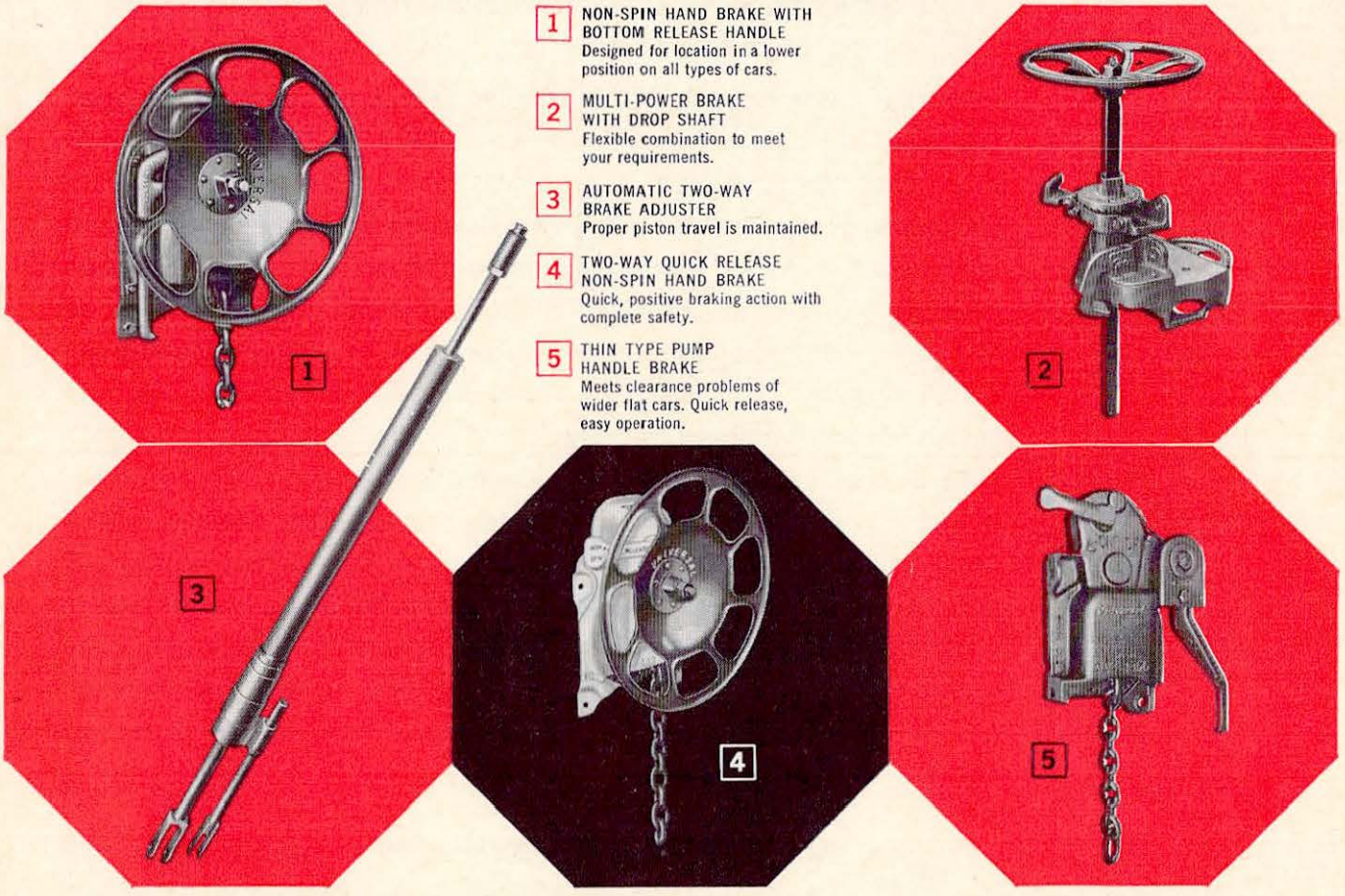

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RAILWAY AGE
THE TRANSPORTATION WEEKLY
June 24, 1968

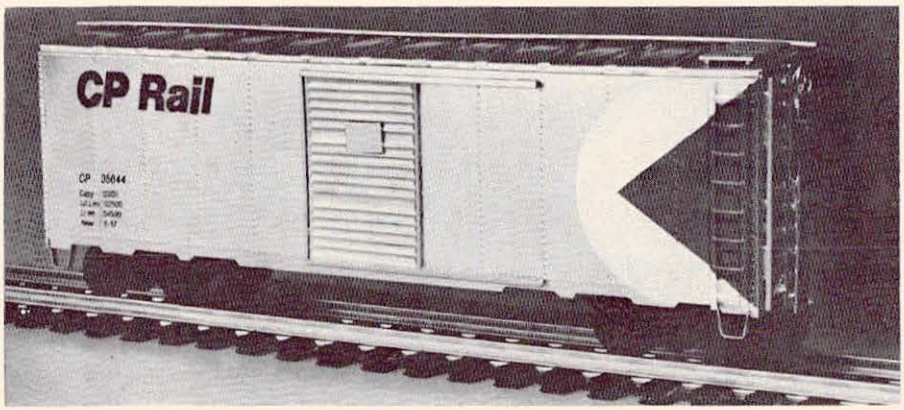
WEEK AT A GLANCE

ICC knocks down higher rate tariff, authorizes 3% hike

The ICC last week suspended the railroads' Ex Parte 259 tariff but said it would allow an immediate freight-rate increase of 3%. That's expected to yield something like $250 million a year when maximum-increase requirements of the Commission's order are observed. Those requirements are that maximum increases shall be no higher than those proposed in the suspended tariff, and that the 3% increase shall "in no event produce a greater revenue in connection with any rate or charge on any particular commodity or service" proposed in the suspended tariff. An annual revenue increase of $462 million was proposed in the suspended tariff that was to become effective June 24.

The Commission's order, served June 19, authorized the filing of tariffs publishing the 3% increase on one-day's notice. The railroad proposal had sought selective increases up to 10%.

The Commission's order also instituted an investigation of the original proposal and of the authorized increase.



A new image for Canadian Pacific

Canadian Pacific's familiar beaver trademark was nosed out of the corporate identity picture last week as CP unveiled its new international symbol, a blend of triangle, circle and square.

"Our new symbol," said CP Chairman Norris R. Crump, "will begin appearing in public before the end of 1968—red on trains, orange on aircraft, green on ships and blue on trucks." The new identification (see photo) also replaces the goose used by CP's air arm and the checkered flag, its maritime symbol.

The symbolism of the symbol, according to CP, is that the triangle suggests motion or direction, the circle suggests the global activities of the giant company, and the square stands for stability. Lippincott & Margulies, Ltd., created the new design.

"We are no longer a railway company with an airline, some ships and trucks," said Crump. "Our new symbol conveys what we really are—total systems for movement."

UP, N&W devise a new landbridge plan — with flexibility

"Landbridge Now" might be the slogan of Union Pacific and Norfolk & Western, in their new single-interchange proposal for moving international container traffic between the Atlantic and the Pacific. Unlike the plan prepared recently by Santa Fe and Penn Central which involves multiple movements of container trainloads, the UP-N&W concept is a start-at-the-bottom-and-work-up sort of thing. Key elements of the plan:

—Charges will be based on a one-car minimum, with progressively lower charges as the number of carloads in a single movement increases. Charges will range from $1,320 per carload for one to 10 cars, down to $1,020 per carload for 31 or more cars.

—Containers are to be furnished by ocean carriers, railcar equipment by the railroads. Any ocean carrier may participate by filing written concurrence with the land carriers.

—Service can be provided to and from a number of ports. On the west end, UP serves port facilities in California, Oregon and Washington. On the east end, N&W notes that the operation is "particularly applicable" to the ports of Norfolk and Portsmouth, Va., now offered container service by about 50 ocean carriers.

—While the opening shot is a two-road affair, with interchange at Kansas City, both UP and N&W plan to offer the same arrangement and charges in conjunction with other connecting lines via normal tariff routes.

UP President Edd H. Bailey says his road and N&W "believe we have developed a workable landbridge concept with a realistic approach to present-day requirements. The plan recognizes the present limited quantity of landbridge traffic and will, therefore, utilize existing high-speed freight schedules."

The ATSF-PC landbridge plan is of a different breed. By its terms, the shipper would furnish the equipment.

GUS WELTY

LINES ON LABOR

THE RAILROAD MAN: Who is he? How does he think? What shapes his thinking? What are his beliefs, his interests, his goals? Why is he what he is? Why does he think and act as he does? What is really known about the railroad man, aside from the mass of statistical information the Railroad Retirement Board might provide? And isn't it about time somebody got a better handle on the answers to some of these questions?

THERE'S NO LACK of opinion on the railroad man and what makes him tick, But the conclusions that are drawn vary so widely that it makes a fellow wonder: How much bum information is masquerading as truth when the generalities, glib and glittering, come spilling forth?

CASE IN POINT: Is it true, as one top-level government official recently said, that railroad people tend to work on the railroad because they like railroad work . . . that this gives railroads an advantage in trying to communicate . . . that railroad people will listen, once railroads learn how to talk with them? Or is it true, as one top-level labor-relations officer said, that communication with employees is a lost cause?

JUST HOW DOES a railroad employee regard his job? One of the major brotherhoods ran a survey a few years ago. Four out of five respondents said that they do indeed find the work interesting, and that they consider railroading a respected line of work. At the same time, fewer than one in 10 considered chances for advancement as good. And 70% said they would not advise a young man today to go to work on a railroad. That's enough to cast just a bit of doubt on any broad statements covering job satisfaction.

BUT IS COMMUNICATION, then, a lost cause? It would seem not. The returns aren't all in yet, but Illinois Central appears to be on its way to proving that meaningful dialog can take place between employer and employee. IC is trying to get a story across in a labor dispute—the toughest kind of communication—and a sampling of the feedback indicates that the individual employee is not the blind follower of union policy that some (among unions and managements alike) would make him out to be.

DR. FRED COTTRELL, ex-railroad man and now chairman of the department of sociology and anthropology at Miami University, did an extremely perceptive study many years ago called, simply, "The Railroader." Some kind of updating might be valuable.

Superintendents get the word on improvements

As Northern Pacific President L. W. Menk put it, the increased sophistication in railroading has not reduced responsibility—it has rather "heaped a new measure of responsibility on all railroad management, and particularly on operations personnel charged with the actual movement of trains."

It was on that note that the American Association of Railroad Superintendents tied into its current crop of problems last week in Minneapolis. The accent was on improvement—and in the comments of Menk, Great Northern President John M. Budd and Federal Railroad Administrator A. Scheffer Lang, plus their own discussions, the theme never lagged.

Lang, in particular, laid it on the line—outlining the dimensions of the problem and suggesting a few areas for concentrated attack.

He recalled, for instance, that the railroad share of intercity freight revenues has dropped from 32% in 1958 to 24% last year. His conclusion: Railroad transportation is becoming less and less attractive to the market as a whole.

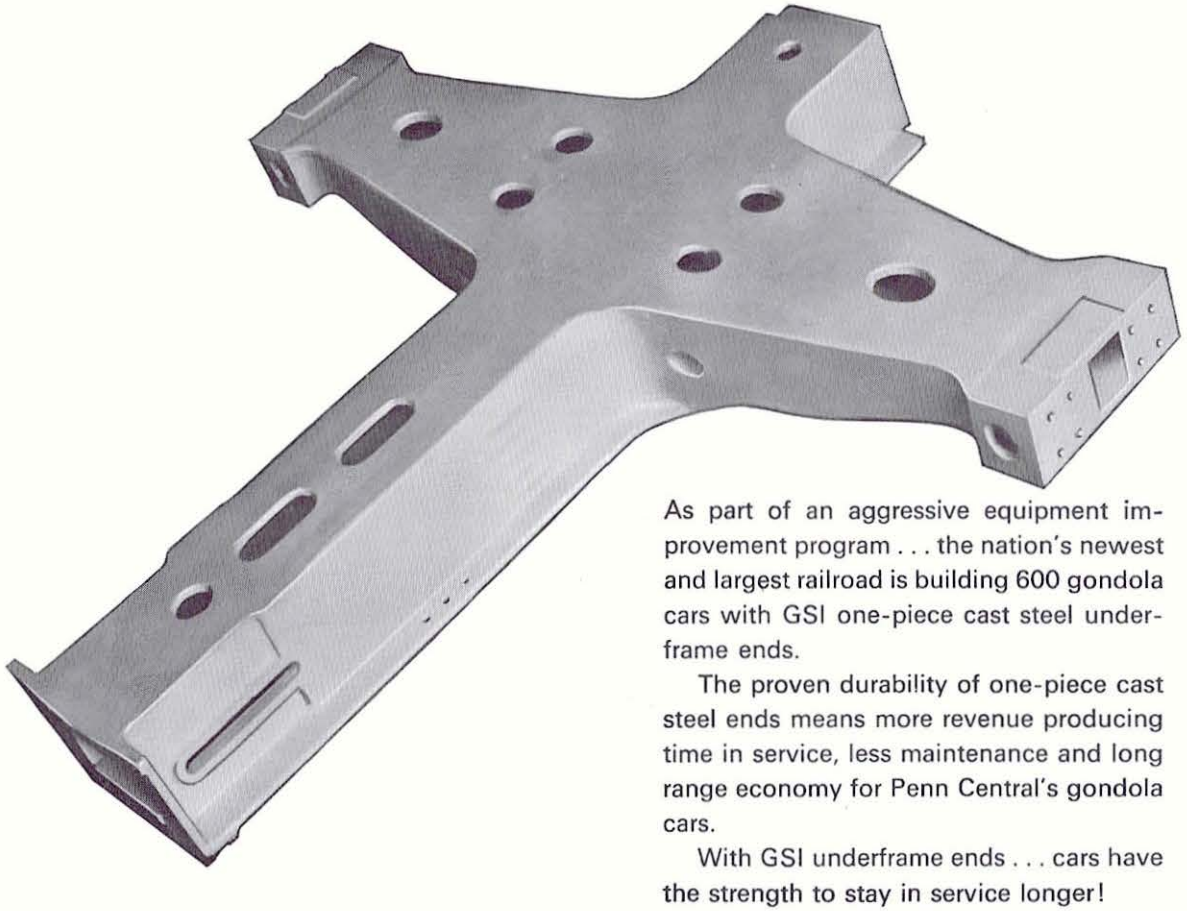
Generally, he said, railroads are already cost-competitive in most markets. The industry stands up reasonably well in terms of speed of movement. Reliability of service is the key operating problem—and, Lang emphasized, it is the transportation officer who has the main responsibility for solving this problem.

Railroad transportation, he said, must be transformed into a "precision product, not of the sloppy-tolerant type which might once have sufficed, long ago."

DOT's Federal Railroad Administrator also called for a new look at control systems, both terminal and over-the-road. In terminals, he asked, how many control systems have been installed? How many actually work? How many are really taken seriously by terminal operating management? And as for over-the-road control systems, how many were designed for tracing and car distribution purposes? How many are structured and used to promote precision movement?

Lang said he remains convinced that railroads will play "an absolutely indispensable role" in future transportation patterns. But, he concluded, problem-solving must be undertaken: "I wonder if our sights have been set high enough—or our goals pursued with enough conviction."

GSI is now producing 1200 one-piece cast steel underframe ends for the Penn Central



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The 3600-hp Alco is new from truck to turbocharger.

Alco 636's on the Spokane, Portland and Seattle.

The economics of tomorrow's railroading will depend on high speed and low, low operating overhead. That's why the Spokane, Portland and Seattle bought our new Century 636's today.

Check out the new Century 636. It offers the best of both worlds: better low speed and high speed performance. Plus more economical operation. Here's why.

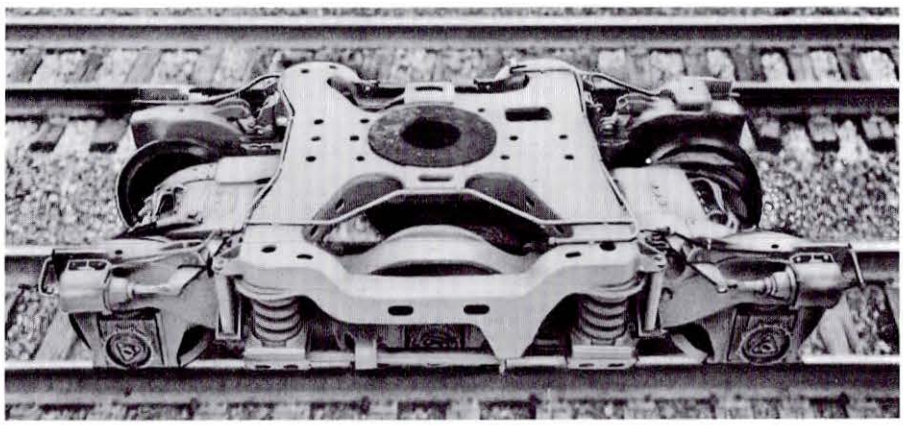
All new trucks.

New 3-axle Alco trucks. America's first all-new locomotive trucks in 25 years. They're engineered for mainline duty at high speeds. And they offer tremendous traction at slow speeds.

Double coil springs flatten out track irregularities. Help eliminate wear. Bolster anchors at axle centerline equalize loads on each axle for better tractive effort utilization. Our new trucks are backed by automatic wheel slip detection and correction at both high and low speeds.

More powerful 3600 hp engine.

We've introduced a new 251 diesel engine that delivers 3600 horsepower for traction. It's an advanced version of our Model 251 engine that is featured on other Century locomotives.



The advantages? Engineering that's been well-proven over millions of miles. Parts interchangeability. Familiarity with engine design and service.

We've designed new air and fuel systems incorporating a new Alco Model 165 turbocharger, higher overlap camshafts, and higher capacity fuel injection pumps. With these changes the engine uses fuel more efficiently, breathes more freely, runs cooler, and delivers the power. There are still only 16 cylinders, thus there are fewer working parts, fewer complications and less engine wear.

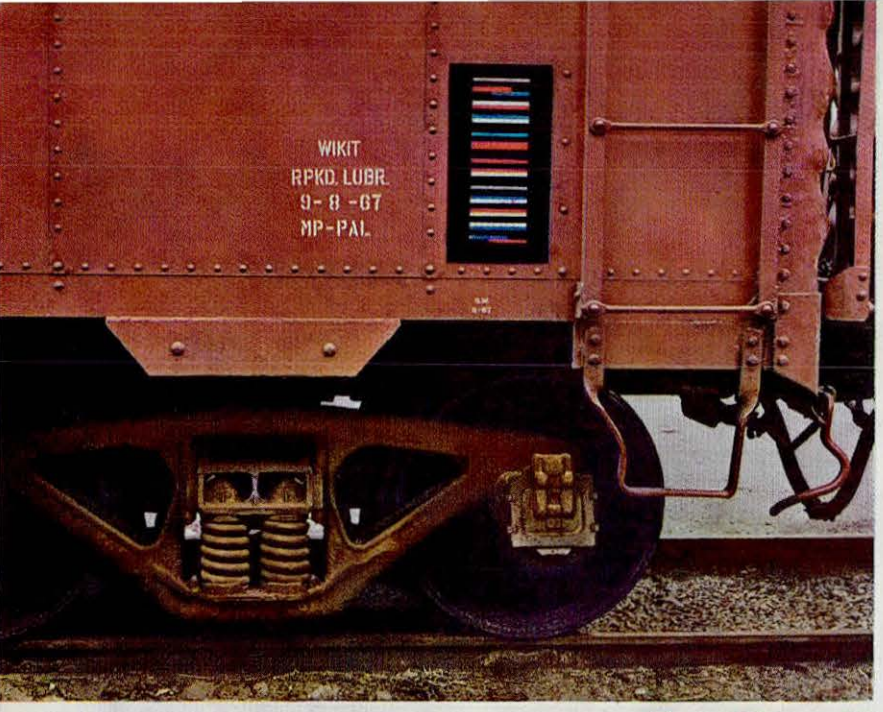
We've also added a number of other reasons to order from Alco.

New steel-capped aluminum pistons combine long wear in the ring area with light-weight body—to ease the load on the crankshaft and bearings.

We've added capacity. 17% more sand. 30% more lubricating oil. And more fuel. We've kept the same dimensions as on our 3,000 hp unit.

We have complete technical data ready and waiting. Just write Locomotive and Engine Products Division, Alco Products, Inc., Dept. 1010-82, Schenectady, New York 12305. Alco Products is a subsidiary of Worthington Corporation.

ALCO



By 1970, our label will be as familiar to you as this one is to your wife.

A label not only tells you what's in a bottle. It also lets you tell one from another.

Your wife knows how important this is in a crowded supermarket.

Well, it's even more important in a crowded railroad system.

That's where our KarTrak* Automatic Car Identification System comes in. By 1970, our label will be on every one of the 2 million freight cars in North America.

It'll not only let you tell your car from the other guy's, but it'll also keep track of them.

So you can use each car more often, minimize human error, and keep accurate per diem accounting.

You'll handle more traffic. Deliver on time. Schedule more efficiently. And operate more economically.

In fact, we figure it could save you over a million dollars a year. For example, suppose each of your freight cars is worth $15,000. If you operate 1000 cars, that's a $15 million investment.

A 10% increase in car utilization would mean a $1,500,000 increase in value per year. And that's a conservative estimate of what KarTrak will do for you.

So if you're having trouble keeping track of your cars, take a tip from a ketchup company and use a label to stand out from the crowd.

Sylvania Information Systems, Commercial Electronics Division, Bedford, Mass. 01730.

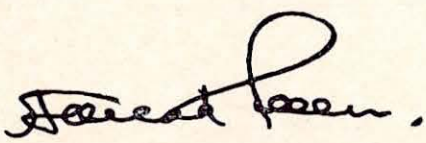
SYLVANIA
A SUBSIDIARY OF GENERAL TELEPHONE & ELECTRONICS

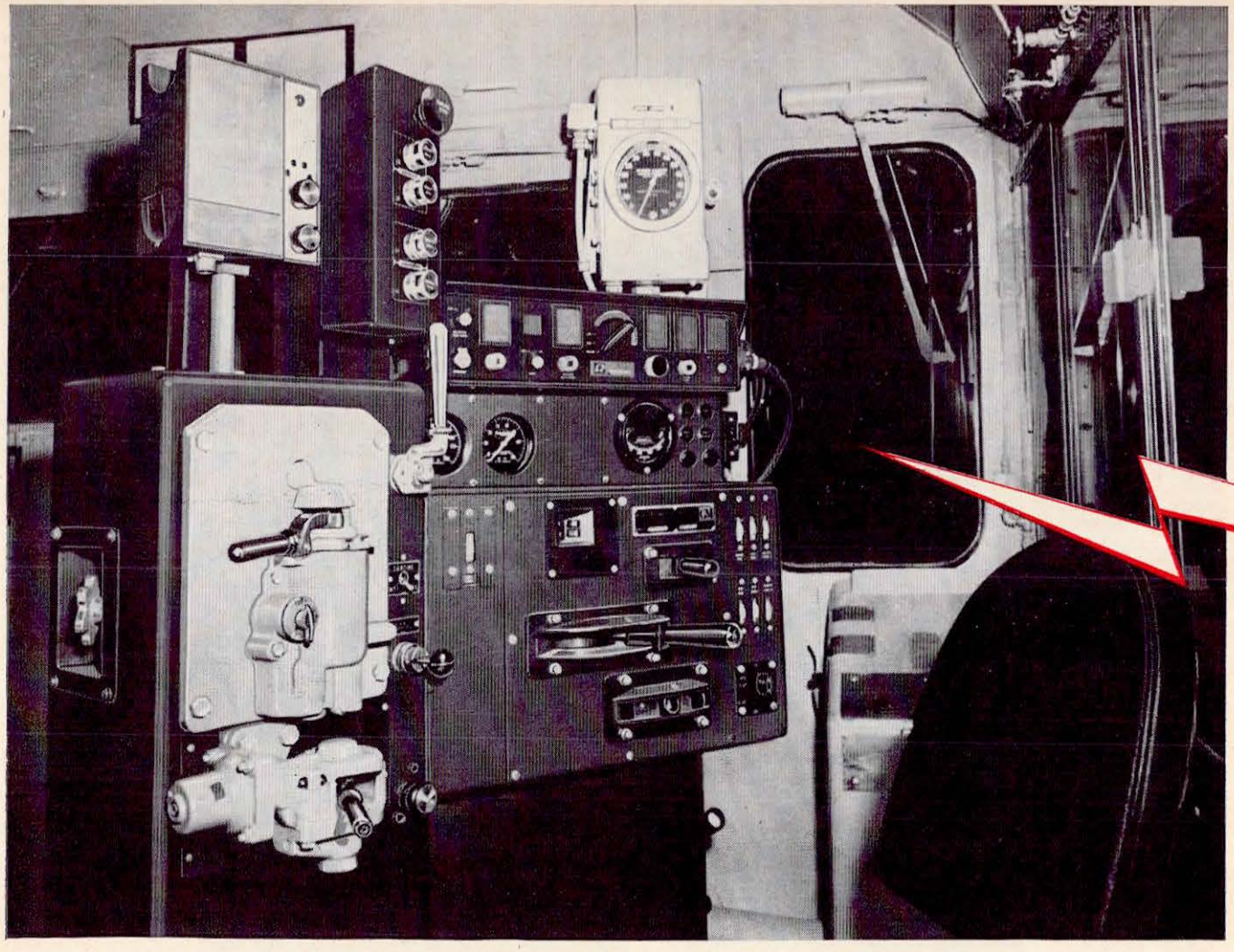
*TRADEMARK

HOWARD D. POLLEN, TRAFFIC MANAGER
P. Ballantine & Sons

"I think many of the features of Railway Age are things no traffic man should be without. In particular, the yellow pages with such timely departments as 'Short and Significant,' 'Monday Morning Report,' 'Market Outlook,' 'You Ought to Know'– as well as the 'Traffic Poll,' are of prime reading interest.

"I believe that the 'Traffic Poll' is a very useful exchange of thoughts for the people in the transportation field and I enjoy participating in this forum and reading the comments of others. I trust your magazine will be published for a long, long while."





THE STORY YOU ARE ABOUT TO READ IS TRUE··· ONLY THE MOTIVE POWER HAS BEEN CHANGED TO PROTECT THE CARS.

Consider any train

The longer the train... The more horsepower required... the greater the advantages.

Two of the locomotive units are equipped with LOCOTROL*... the "MASTER" and the "SLAVE."

The "MASTER"... with the engineman's console... is in the lead and controls the head-end consist...

The "SLAVE"... buried deep in the train, controls all the units you choose to place in the trailing consist.

The "SLAVE" does what the "MASTER" does...

No faster... no slower... SIMULTANEOUSLY!

THE OBJECT...

Get the train over the road faster and smoother!

*LOCOTROL... Registered trademark of RADIATION INCORPORATED

LONG TRAINS ARE SHORT

with

LOCOTROL®

WHAT LOCOTROL DOES

Increases the efficiency of long train operation by simultaneous control of power and brakes on Slave and Lead locomotives.

Enables long trains to attain running speed faster for improved schedules.

Reduces yard time by speeding the terminal test.

Reduces stop distance by faster application of the brakes.

Reduces incidence of "break-in-twos."

Controls slack, with reduction of damage to cars and lading.

Saves vast amounts of time lost in maintenance and repairs, as well as transfer and reloading when cars are damaged.

Notch out the throttle...or apply the dynamic brake... and the "SLAVE" consist...with only LOCOTROL aboard...responds in kind.

Apply the air brakes or release them...the application or charge is initiated simultaneously at two locations...in three directions.

From the "MASTER" rearward...

From the "SLAVE" both forward and rearward.

Drawbar tension is greatly reduced because the power is "teamed" into two consists. The "pull" is no longer all from the front end. And in "braking"...the rear end need not run in on the front end while the brakes are coming on. Trains of 150 cars can be handled as smoothly and efficiently as 50 car trains.

This is why we say:

LONG TRAINS ARE SHORT WITH LOCOTROL.

MEMBER RPI RAILWAY PROGRESS INSTITUTE

NEW YORK AIR BRAKE COMPANY
A UNIT OF GENERAL SIGNAL CORPORATION
230 PARK AVENUE · NEW YORK, N. Y. 10017

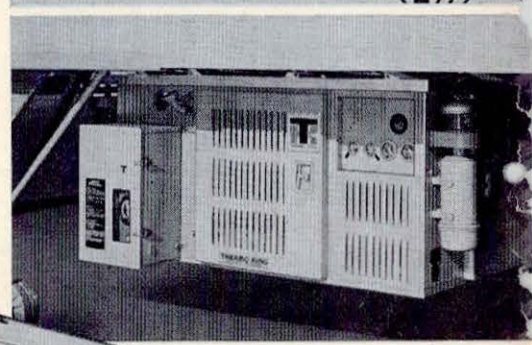
Circle 12 on coupon page 70

Specialized Thermo King refrigeration units stack up to rugged requirements of piggy-back operations

Professional piggybackers rely on these professional Thermo King units to keep valuable perishable cargoes at constant temperatures no matter how long the run or variable the ambients.

In these diesel-powered undermount and frontmount units, Thermo King has answered the industry need for absolute reliability with heavy duty extra capacity components, engineering innovations that provide an extra margin of safety, and exclusive maintenance features that save downtime and labor.

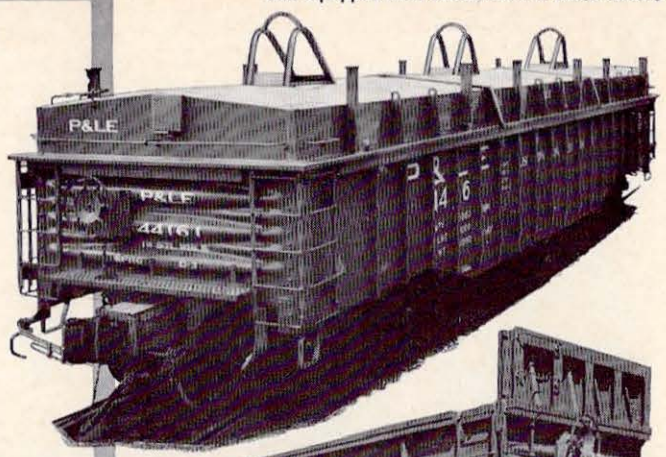
For information on why these diesel-powered Thermo King units mean lowest cost per mile in refrigerated piggyback operations, write Miles Harvey, Manager Railroad Division, Thermo King, 314 W. 90th Street, Minneapolis, Minn. 55420



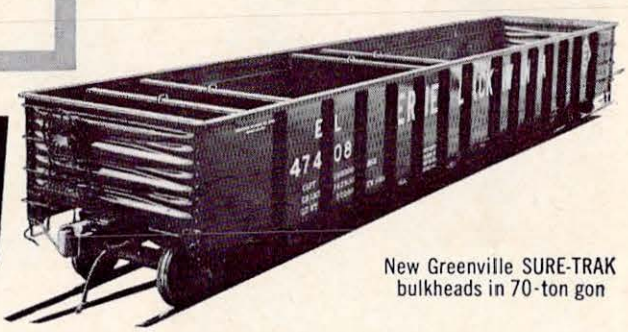
THERMO KING®
corporation
MINNEAPOLIS, MINNESOTA 55420
WORLD LEADER IN TRANSPORT REFRIGERATION

Here are..... 4 cars which will help you move steel more efficiently

Gon equipped with Greenville E-Z stack covers



High-end 65-foot gon for pipe



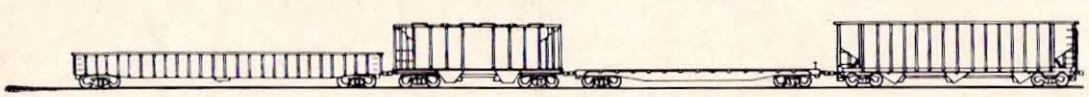
New Greenville SURE-TRAK bulkheads in 70-ton gon

The Greenville hot coil car (below) helps two steel producers move costly, in-process inventory off their floors while the steel is still hot, making floor space available for other production.

These cars offer real opportunities for unit train service. Like other Greenville cars, they were designed as a result of thorough understanding between builder, railroad and shipper. If moving steel more efficiently and economically is one of your aims, we'd like to talk with you. We have the cars and the willingness to help you do it.

HOT COIL CAR
handles coils to 850°F

GREENVILLE STEEL CAR COMPANY
Subsidiary of Pittsburgh Forgings Company
GREENVILLE, PENNSYLVANIA



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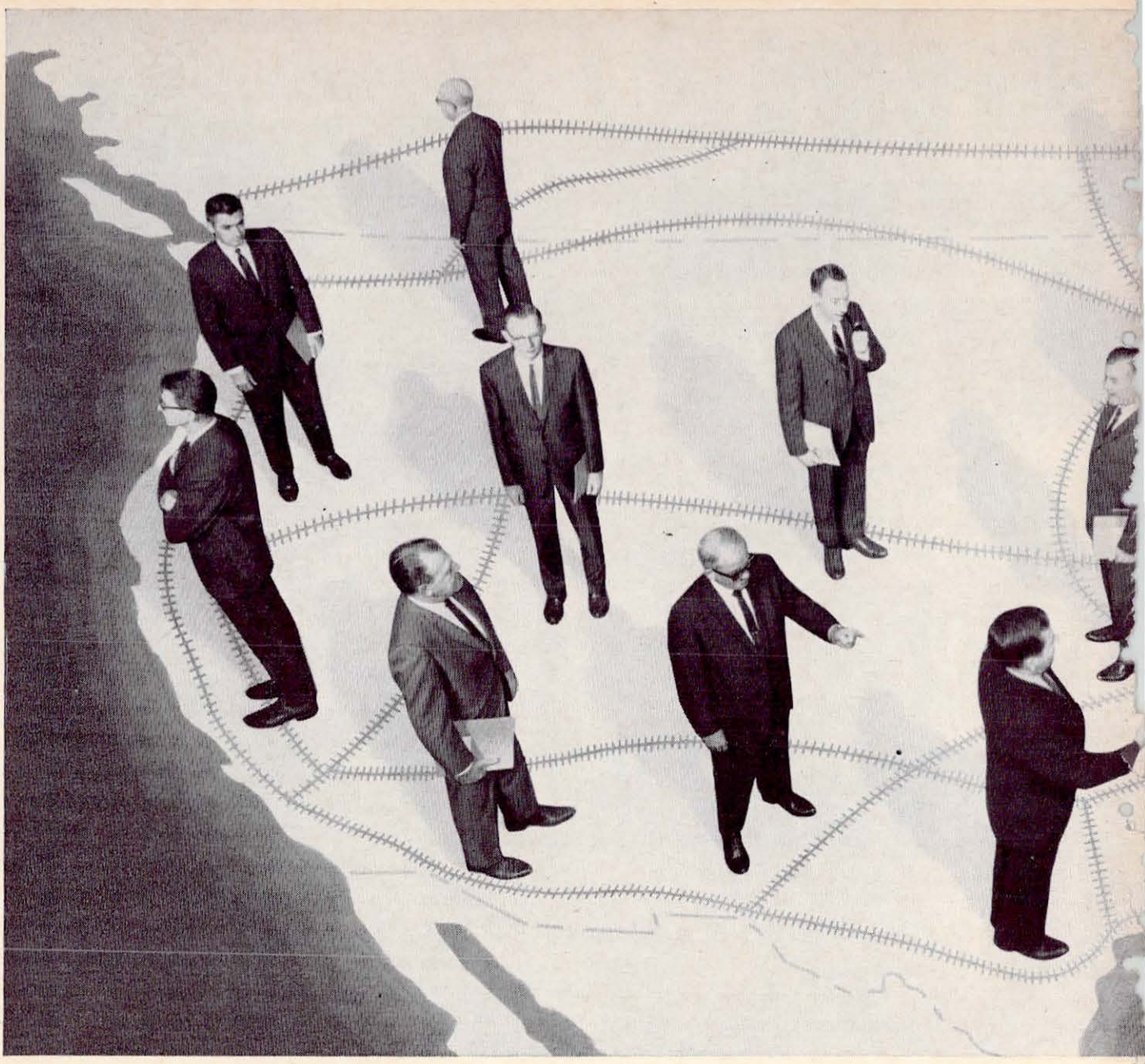
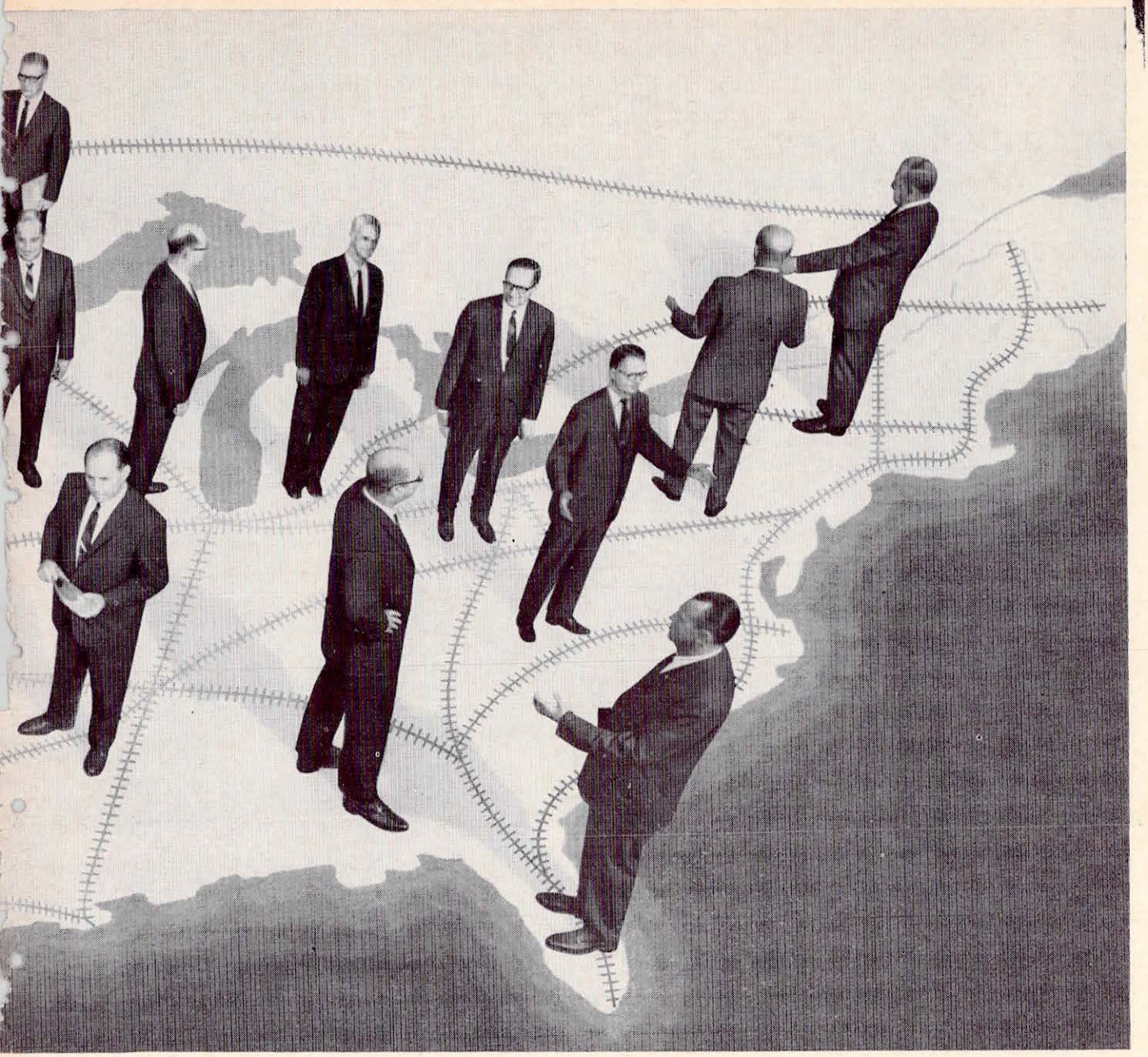


No railroad map is complete without



our Service Engineers.

Located to help keep your rolling stock roll-ing, these railroad bearing specialists (and more are available) are trained to spot trouble before it starts. They work with your shop or yard personnel in the care, assembly, inspection and maintenance of Timken® railroad bearings.

And for any bearing questions they can't answer, we have an experienced group of engineering and research people ready to help you. Why don't you specify Timken "AP" bearings and get this complete field engineering service?

The Timken Roller Bearing Company, Canton, Ohio. Timken bearings sold in 133 countries; manufacturing in Australia, Brazil, Canada, England, France, South Africa and the U.S.A.

TIMKEN®
TAPERED ROLLER BEARINGS

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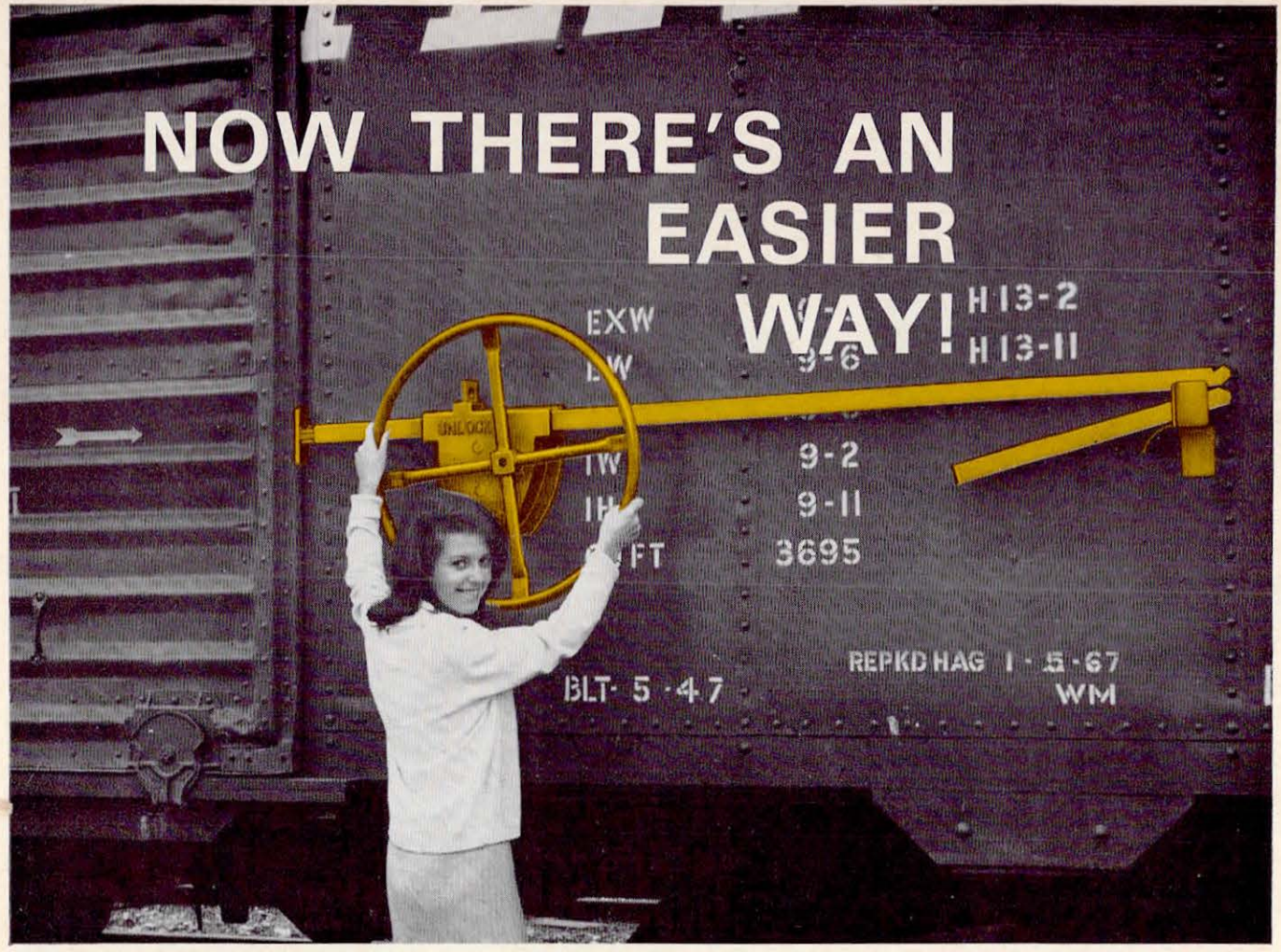

New SLIDEWELL Door Control Solves Serious Shipper Problem and Cuts Cost of Car Door Replacement and Repair

Why put up with the extra cost and inconvenience of present day car door opening-closing practices? Shippers can forget the forklifts and put away the sledgehammers, crowbars, cables, chains and blocks. There's no longer a need for these instruments of boxcar door destruction. Why subject your car doors to pushing, beating, banging and twisting? That kind of treatment only adds to tempers, downtime and car maintenance costs.

The Hennessy Slidewell Door Control provides you with an easier way, a sensible way, and a much less costly method. An almost effortless turn of the wheel is all that's required to open and close boxcar doors, because the Slidewell has a 35 to 1 mechanical advantage. Door is opened in seconds and locks to open position. To close, just lift the locking pawl and turn the wheel in the reverse direction. What's the cost? No more, and probably less than the cost for one car door repair.

The Slidewell Door Control fits all boxcar sliding doors, and installation is fast and uncomplicated. The unit has been thoroughly tested. It's rugged and dependable and solves a real railroading problem. On your cars (old and new), the Slidewell will keep your shippers better satisfied and eliminate a substantial percentage of your car door maintenance cost. What cost-conscious, public-relations-minded railroader could ask for more?

WRITE FOR COMPLETE DETAILS AND PRICES

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HENNESSY PRODUCTS

Patent Pending

HENNESSY PRODUCTS, INC., BOX 420, CHAMBERSBURG, PA. 17201

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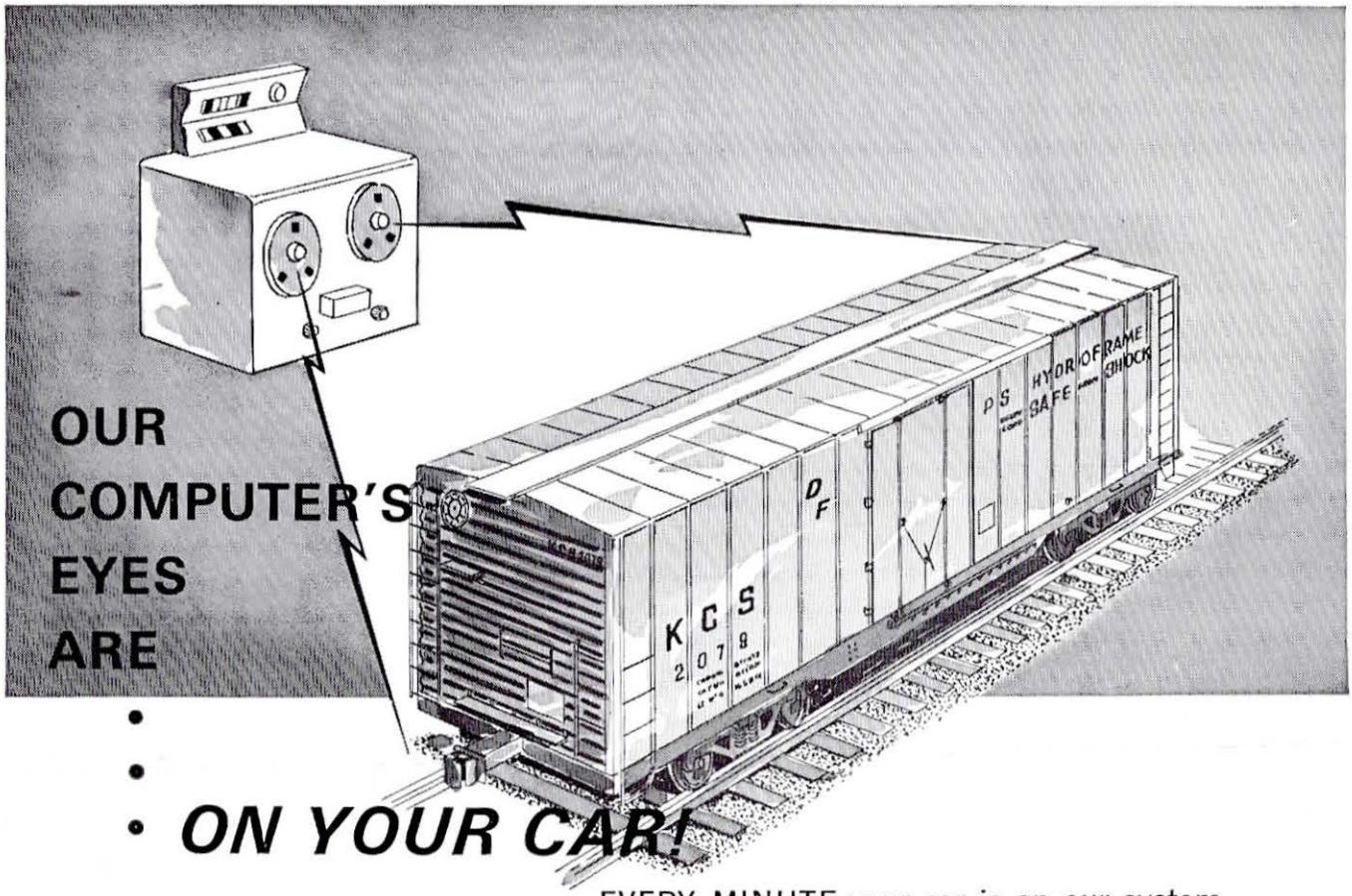

OUR COMPUTER'S EYES ARE

• • • ON YOUR CAR!

EVERY MINUTE your car is on our system the eyes of a computer are upon it, ready to give instant information as to its location and movement.

Beginning at the time your car reaches us, a computer charts its progress to destination or delivery to another carrier.

For an immediate check on your shipment, all you need do is to punch a code and car number into your own Telex or TWX, or phone your nearest K. C. S. traffic office.

Please call upon us for further information, including a booklet detailing our instant car tracing system.

KANSAS CITY SOUTHERN Lines

J. W. SCOTT
Vice President—Traffic
KANSAS CITY, MO. 64105
Tel. 816 VI 2-0077

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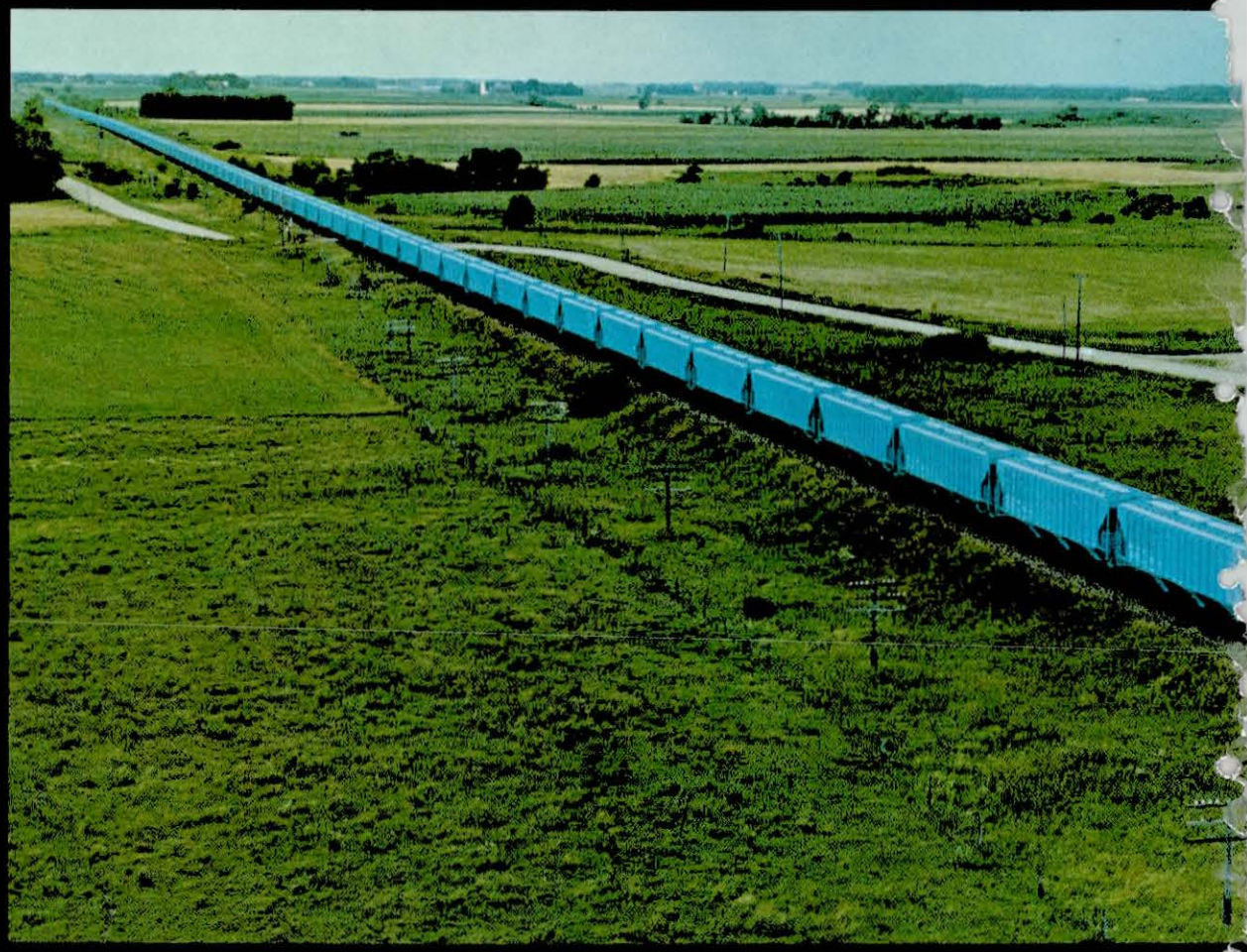
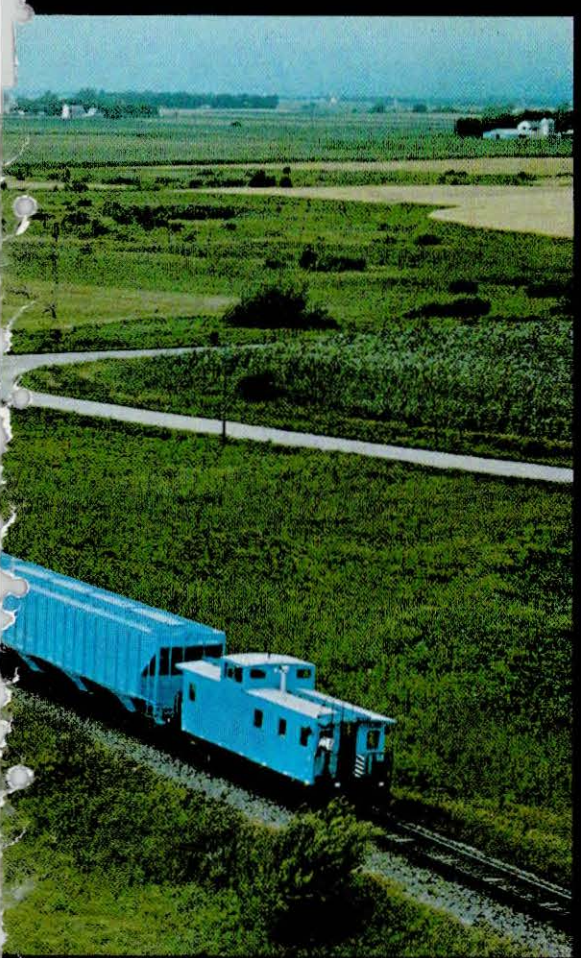


Every one of these covered hoppers is exactly the same.

Except one cost us $128,432.78.



That's many times what the production model costs you.

But, it takes a lot to come up with the single right answer like the versatile Pullman-Standard covered hopper car.

It takes an alert Industrial Marketing Department studying your problems, and your customers' problems.

That's only the beginning.

It takes imaginative Research and Engineering to come up with a solution. Experienced specialists to produce it. And trained Sales and Service engineers to follow through.

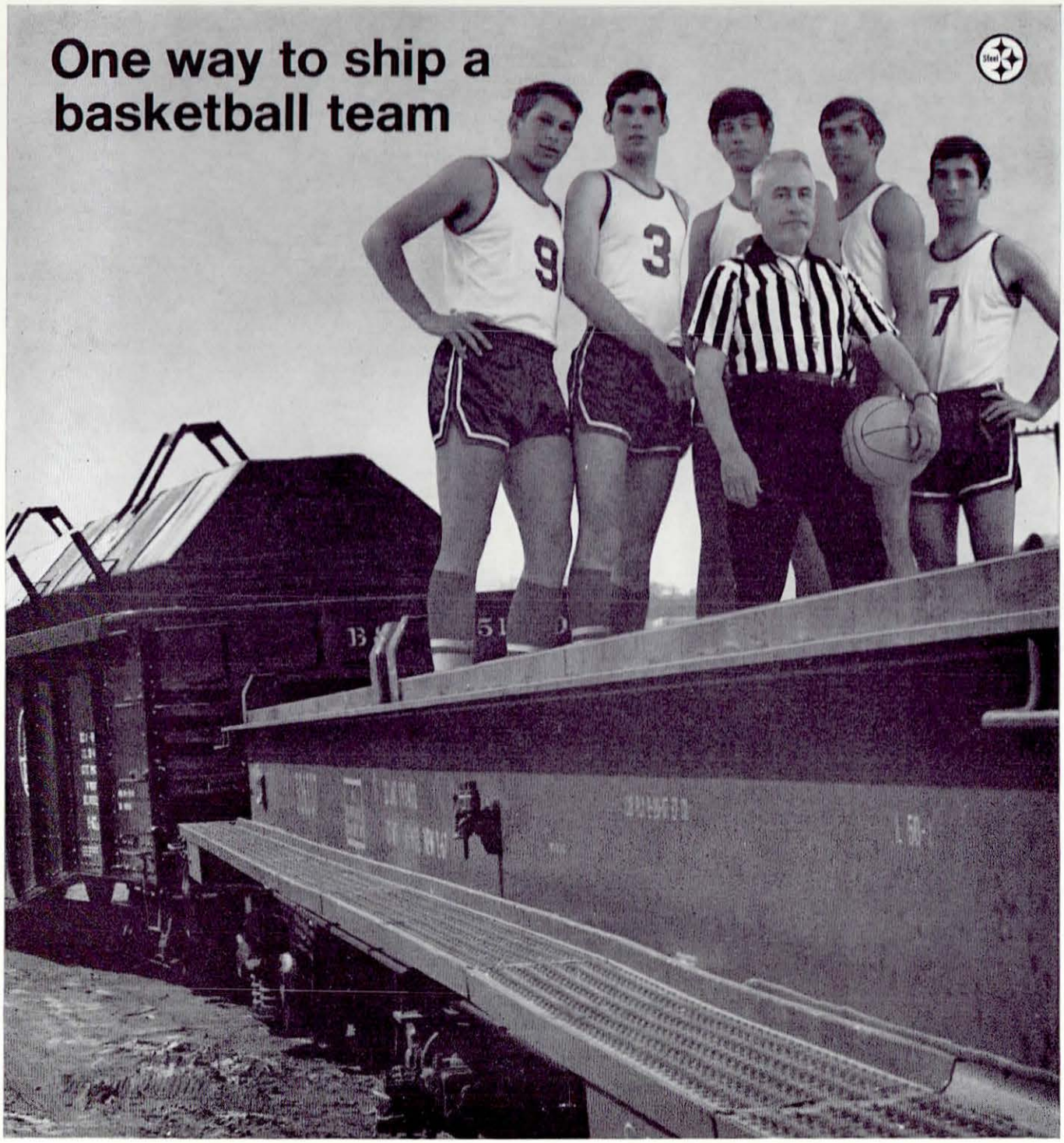
How do you protect your investment in railroading's future?

Work with someone like Pullman-Standard, who's invested, too.

Of course, there isn't any one else like Pullman-Standard.

Pullman-Standard
WORLD'S LARGEST RAIL CAR MAKER
200 South Michigan Avenue, Chicago, Illinois 60604

A Division of **Pullman Incorporated**

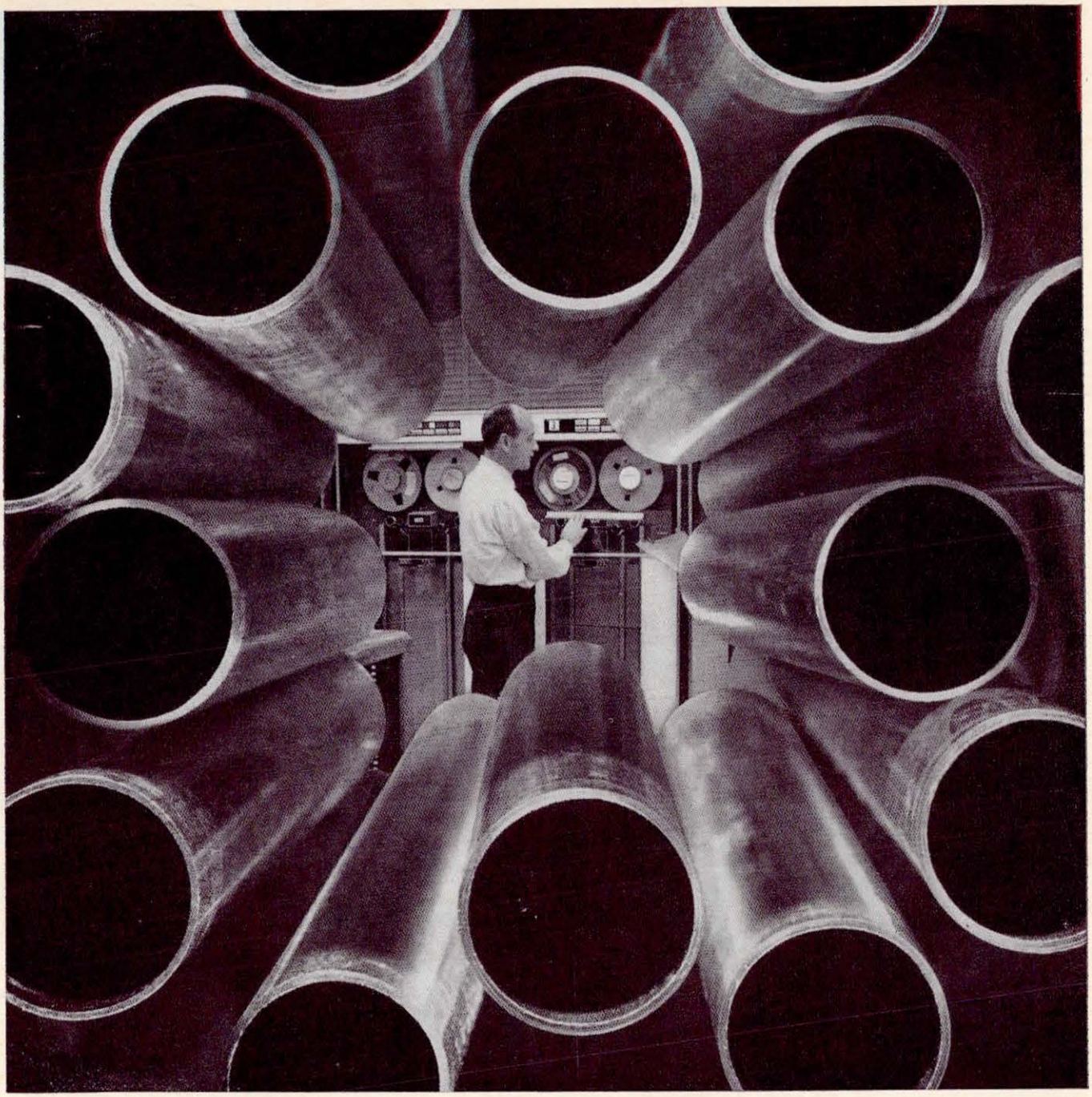


Even the seven-footers won't have to duck when the Republic Steel coil cover is lowered to the flatcar deck. A little air thru the rain-shedding louvered air vents at each end will keep them dry, well protected, free from condensation.

Republic Steel coil and gondola covers are sturdily constructed . . . exclusive-design steel corner framing and 13-gage corrugated sheets keep covers square in spite of rough lift-off, stacking, and replacing by over-energetic cranemen. Ladings are better protected, shippers are better satisfied when you use Republic gondola covers. And your car shop has fewer bad-order covers to repair.

Let us bring you specifications and data on Republic Steel coil covers before you finalize your decision to add or replace coil covers in your fleet. Contact our nearest District Office. Or call direct to Manufacturing Division, Republic Steel Corporation.

REPUBLIC STEEL
MANUFACTURING DIVISION
YOUNGSTOWN, OHIO 44505



Can a computer be a pipeline?

TRACE acts as one for Reading customers. All our sales offices are linked to TRACE, our computer system. So it becomes a communications pipeline, pouring out a steady volume of information. Answers to your requests for data on services, rates, location or availability of equipment, warehousing, etc., are supplied with the speed that only a modern computer system offers.

TRACE also keeps its electronic eye on every shipment on Reading rails. Digests every move made by every car. It can tell you where your shipment is, almost hourly, en route to its destination.

Try Reading. Discover what really progressive railroading can do for you in solving your distribution problems and speeding up your deliveries.

Any questions? Just drop them into the TRACE pipeline at any sales office. It feeds answers back fast. From Philadelphia to Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dearborn, New York, Portland, Ore., Pittsburgh, Reading, San Francisco, St. Louis and Wilmington.

Reading lines

READING RAILROAD

On-time-delivery is our #1 concern

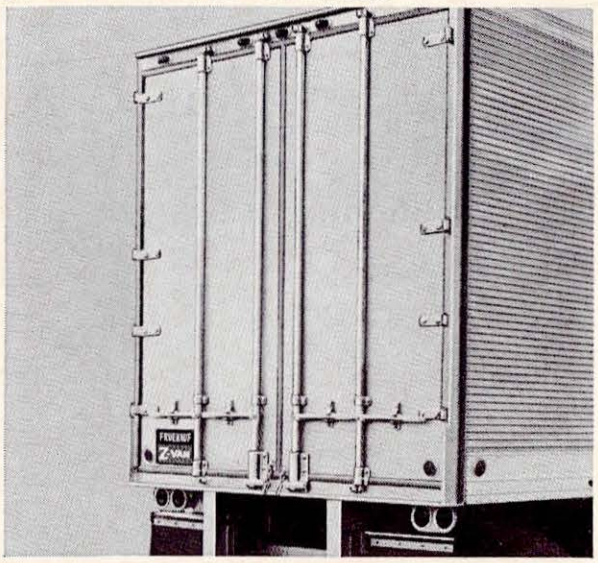
Circle 20 on coupon page 70

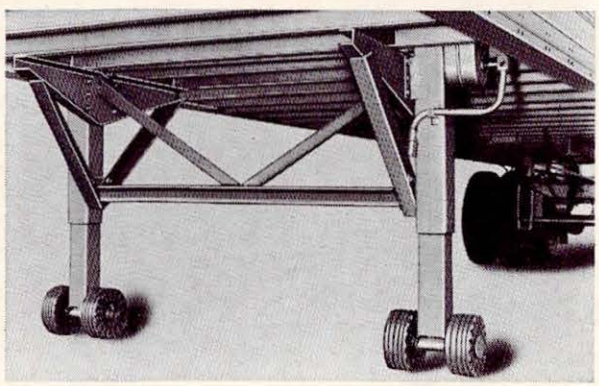
True piggyback construction. These front wall features are standard: Full-width wrap-around steel bulkhead 30" high • 4 pairs of steel posts (8 back to back) with three-quarter-inch full-height plywood liner • recessed, swivel-mounted air hose and electrical connectors.

FRUEHAUF Z-VAN ...the TOFC Van with Zingg!

Z-Van. It's the toughest van Fruehauf has ever built . . . to boost piggybacking profits by lowering trailer operating costs. It will pay you to know all about the Z-Van. Get complete details from your local Fruehauf man or write for free literature: **Fruehauf Division, Fruehauf Corporation, 10942 Harper Avenue, Detroit, Michigan 48232.**

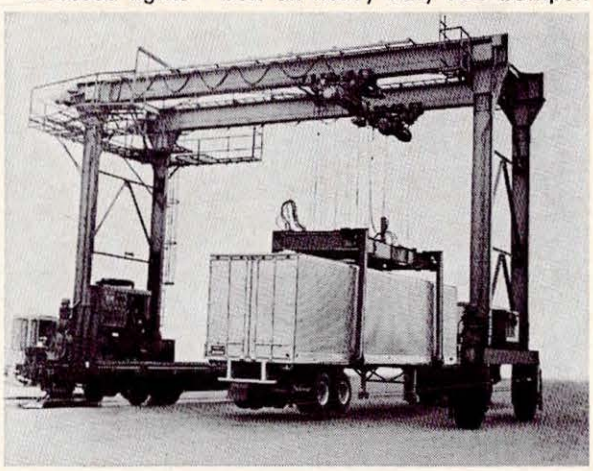
Strongest rear end ever. Here's where: Welded steel unit construction • 1"-thick plymetal doors • two extra (4 in all) cam lock rods • 8 double-strength hinges • integral bull board channel recessed in rear posts • patented Anti-Rax latching.





Extra muscle for extra-rough going. Features include: Two 10-foot steel lift pads on each side • multi-braced, 2-speed square leg supports, inboard mounted • 1⅜"-thick laminated hardwood floor • 4"-deep I-beam crossmembers with 2¼" wide flanges.

Long life and easy upkeep. Just a few of the reasons why: Corrosion resistant, pre-painted aluminum panels • leak-proof, one-piece, heavy-gauge (.040") aluminum roof that's bonded to roof bows • recessed lights • bolt-on heavy-duty ICC bumper.



Trouble-free performance. Here's why: Full-width upper coupler meets proposed AAR/TTMA requirements • one-piece forged kingpin • 36"-wide, ¼"-thick anti-hook plate that's two crossmembers deep • Select-A-Point sliding tandem suspension as standard equipment.

Circle 21 on coupon page 70

Logistics is our business

...and we'd like to make your logistics a special part of our business

WE KNOW OUR FREIGHT CARS are just a part of your total distribution system. What we specialize in is logistics—the complete process of moving materials from your plant to your customers with cost-saving efficiency.

Manufacturers and processors of minerals, chemicals, petrochemicals, and food products of every description will find it advantageous to call on both our experience and equipment.

Our major interest is in establishing long term relationships with progressive companies whose managements can see the benefits of making us part of their planning. If yours is such a company, a meeting could be very profitable...for both of us.

North American Car Corporation, 77 South Wacker Drive, Chicago, Illinois 60606.

NORTH AMERICAN

creates the cars that solve your problems

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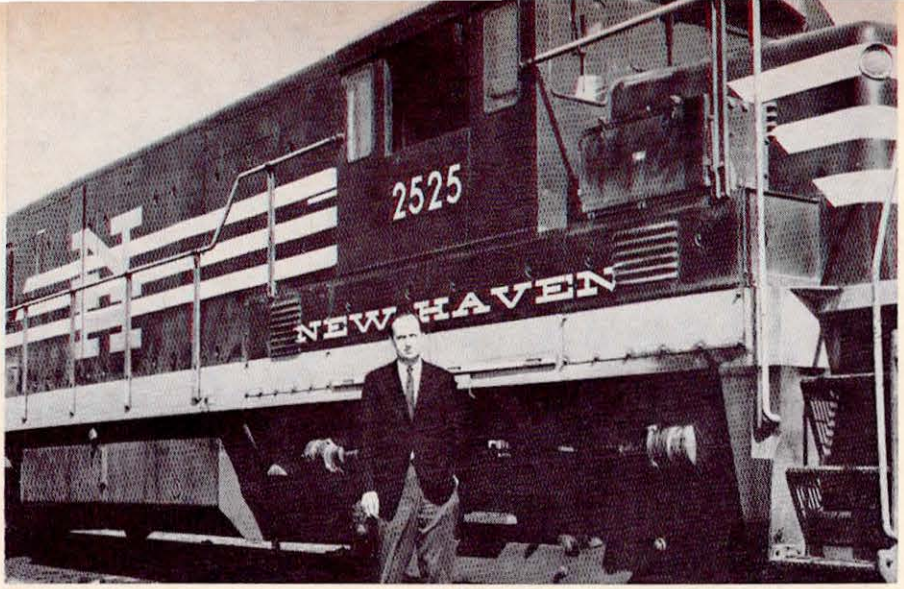


TEST DIESEL, one of 36 units in oil evaluation, was checked by J. J. Pfister.

Cooperative tests cut NH oil costs

Evaluation which showed advantages of highly dispersant oil was made by railroad, oil producer, two locomotive builders.

"An opportunity to team up with manufacturers and suppliers in the testing of an improved product should never be passed up," says J. J. Pfister, general mechanical superintendent of the New Haven. He cites as an example his railroad's recent appraisal of a diesel lubricating oil which showed, despite a higher per-gallon cost, a significant over-all economy. Today, all NH locomotives use this type of oil.

That a financially beleaguered railroad like the New Haven does not choose automatically to purchase solely on price is an indication of the road's heroic effort to achieve operating economies. The oil which underwent an 18-month test, prior to its adoption as a standard, was one of the high-dispersancy lubricants which have come into use in recent years.

● **Economic significance.** As Pfister points out, "the economic significance of getting maximum performance from locomotives with a minimum of downtime in shops has long been recognized." Among benefits of the high-performance oil, the test showed, were cleaner engines and extended periods between changing filter elements. The oil did not deteriorate significantly in heavy-duty service. Samples removed periodically, and at times of oil changes, showed that the lubricant had adequate margins for dispersing contaminants over long intervals, and did retain its lubricating capabilities.

In its appraisal, New Haven teamed up with two locomotive builders and one of its long-time suppliers of petroleum products. When such an opportunity presents itself and the testing can be done without disrupting normal operations, Pfister feels that railroad-supplier cooperation can produce results of value not just to the participants but often to the entire railroad industry.

● **Tested in 36 locomotives.** The NH mechanical department worked with General Electric, Alco Products and Shell Oil in appraising the high-dispersancy oil which had been developed for grueling service such as that involved with 16-cylinder, 2,500-hp diesel engines. It was decided that the Shell Tornus oil would be observed in 36 locomotives: 26 GE U25B units and ten Alco Century 425s. The Alcos and ten of the GEs had been in service for a year at the start of the test, and the Shell oil was used for filling the crankcases after they had been drained but not flushed.

At the time the test started, New Haven was getting 16 new U25B units which were filled initially with the Tornus lubricant. New cylinder and piston (power) assemblies in two of the year-old locomotives were carefully measured so that wear could be determined after a year's service. While testing was proceeding, crankcase oil samples were taken at monthly intervals and checked in NH and Shell laboratories. Emission spectrographs analyzed for aluminum, iron, copper, lead, chromium, zinc and silicon in the oil—detecting immediately any evidence of engine wear.

● **Standard train schedules.** Over 18 months all the test locomotives were generally operated and serviced in accordance with regular NH schedules. At an early stage it became apparent that oil filter elements, when changed on the traditional schedule, were being discarded prematurely. It became possible to increase the service life of filters on all the units with the high-dispersancy oil.

GE approved extending filter changes from two to three months on its units. Alco gave clearance for an extension to two months from the normal change time on its locomotives. NH did continue its policy of draining crankcase oil every six months.

Fifteen months after the test began, one of the U25B units with the premeasured power assemblies was brought into the shop after 104,050 miles. The locomotive had averaged 2.32 gallons of fuel per mile while being operated with the Tornus oil. Representatives of several other railroads, GE and Shell were on hand for the component inspection.

"Our first observation when the power assemblies were opened," reports Pfister, "was the remarkable cleanliness of all surfaces and the almost complete absence of sludge and lacquer." He rated piston and ring wear as low, considering that the test period included break-in of new components.

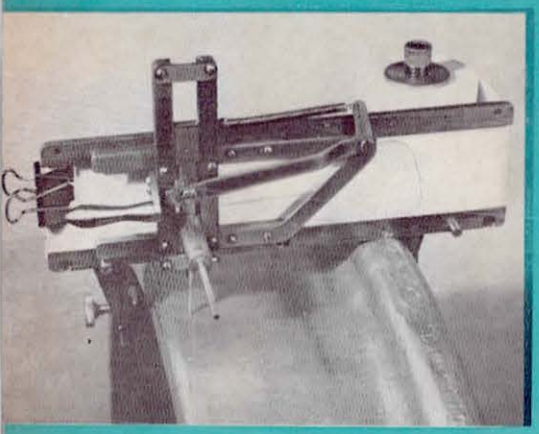
● **The big proof.** Evidence of the highly dispersant oil's superiority, says Pfister, was perhaps best indicated by measured and visual inspections of the bearings. The only indication of any wear was on the most highly stressed area of the articulated connecting rod bearing. While a small section of the tin overlay did display some wear, measurements showed no out-of-roundness. "It appeared to us," observes Pfister, "that the measured bearing could probably have run for another 500,000 miles without breakdown."

"When a product, proved by test, can help us avoid bringing a locomotive into our shops between scheduled inspections, or help get it out faster when it is in, by reducing maintenance we're saving real dollars," concludes Pfister. "Too, knowledge that our locomotives are operating with lubrication insurance has a value hard to measure in terms of dollars—but the value is there." ■

Design Construction Maintenance

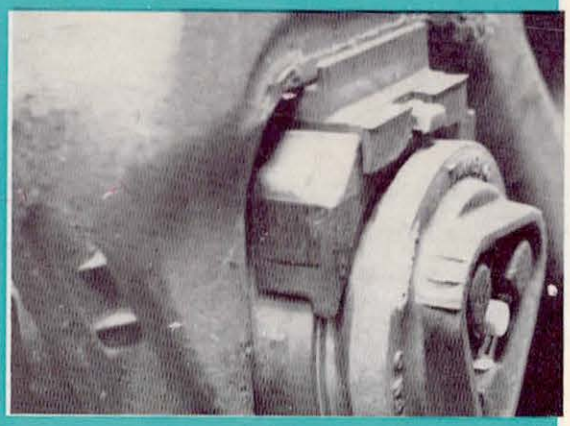
TTX aim:

A. O. TAYLOR checks roller-bearing outer race from TTX car in contractor's inspection facility. Three contract shops do maintenance and repair for TTX fleet.

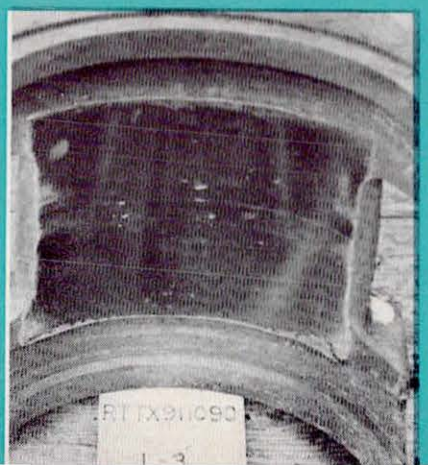


WHEEL PROFILE RECORDERS are used by TTX and its contract shops to determine type and degree of tread and flange wear. Wheel life is a determinant of maintenance cycles.

ELASTOMERIC INSERT, applied above roller-bearing adapter, is being appraised as means of giving added lateral and degree of vertical cushioning to assembly.



TEFLON-LINED ADAPTERS have been tested extensively under TTX cars as part of program aimed at producing additional lateral motion in roller-bearing trucks.



By A. ORVILLE TAYLOR
Chief Mechanical Officer
Trailer Train Co.

Trailer Train's fast moving fleet of 46,000 railroad flat cars has become a virtual laboratory for testing the durability and quality of today's cars and car components. Cars are today built to a much higher standard than those of only ten years ago. Improvements have been incorporated into many areas to reduce defects, cut high maintenance costs and avoid loss of per diem.

● **Two billion miles annually.** The Trailer Train fleet will accumulate over two billion car miles in the next twelve months. This is equivalent to a railroad ownership of 111,000 freight cars each averaging over 18,000 miles annually—the general yearly mileage. As speed and mileage increase, the rate of wear on all freight cars will definitely escalate, pushing up the maintenance costs for AAR interchange repair billing and for periodic heavy repairs.

While the fleet must be maintained, unit costs of maintenance can be reduced by searching constantly for improvements in quality, for new procedures, and by testing, inspecting, and standardizing. Ten years ago a railroad car averaged 15,000 to 17,000 miles annually. During twenty years of service, while accumulating approximately 340,000 miles, most maintenance on such a car represented a combination of AAR repairs on foreign lines and running repairs in company shops.

Today specialized freight equipment such as that for the auto industry, steel industry, electric utilities, and piggyback will be utilized 30,000 to 100,000 miles per year. Everyone who owns such cars has recognized their increased maintenance costs. In less than ten years the same specialized equipment will be operating in freight trains at better than today's passenger-train speeds. This means car maintenance costs could nearly double within the next decade.

● **TTX shows the way.** Using yesterday's deficiencies as a guide, Trailer Train is constantly seeking ways to reduce car maintenance costs. Informa-

Solve high-mileage problems

tion received from TTX member railroads and from those roads not members serves to keep our personnel well informed regarding deficiencies, problems or failures on TTX equipment. TTX district managers and inspectors are advised promptly to investigate such problems, furnishing appropriate inspection reports.

Engineering, research and maintenance groups then review designs, specifications and materials prior to making recommendations for modification. Member roads and manufacturers are often contacted in the course of resolving problems. We approach manufacturers and they, in turn, frequently approach us to review proposed designs and to field-test new devices that may have merit in producing improvements.

In many cases test applications point the way to a solution which may not be accomplished rapidly but does show promise.

● **The advisory committee.** We also maintain valuable contact through the Trailer Train Mechanical Advisory Committee, which is composed of qualified railroad mechanical department people. This committee is not only told periodically of recent developments, changes, and test results but participates in scheduled meetings arranged specifically to discuss mechanical problems with the entire staff of Trailer Train mechanical and engineering departments.

Presently the Mechanical Advisory Committee is as follows: Chairman: E. C. Meinholtz, mechanical engineer, Missouri Pacific; C. C. Ehlert, chief mechanical engineer, Chicago & North Western; T. P. Hackney, Jr., chief mechanical officer-car, Chesapeake & Ohio; A. J. Havlik, superintendent car department, Burlington; E. O. Joest, general mechanical engineer, Union Pacific; C. A. Love, chief mechanical officer, Louisville & Nashville; C. S. Patton, manager motive power and equipment, Norfolk & Western; C. S. Stringfellow, assistant chief mechanical officer - engineering, Seaboard Coast Line; A. Vitale, mechanical engineer —freight car design, Penn Central.

To aid in determining various maintenance costs, both AAR interchange bills and contract-shop repair costs are tabulated for processing on Trailer Train's IBM 360 computer. This information center furnishes over-all costs for repairs grouped in 15 categories, such as wheels, brake system, trucks, piggyback accessories, and periodic maintenance. Eleven areas have developed as major maintenance problems to which considerable thought and improvement effort have been directed.

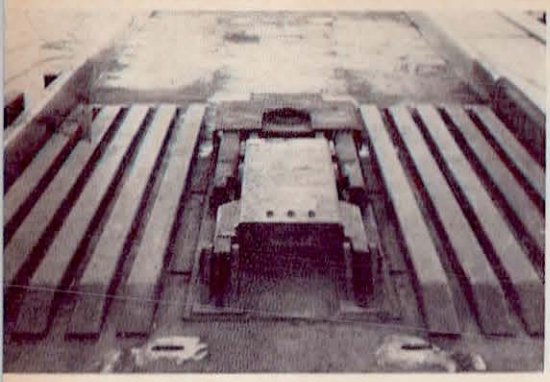
● **Improving wheel service.** Freight car wheels for future Trailer Train cars will have to be of today's passenger-car quality. TTX has used heat-treated wheels for nine years—both one-wear 28 - inch and multiple - wear 33 - inch types. The 33-inch standard was changed from the narrow-flange D33 to the wide-flange R33 wheel nearly 18 months ago, after it was shown that the standard wide-flange 28-inch wheel did not require replacement at 250,000 miles, as expected. This 28-inch wheel operated over 320,000 miles and was replaced because of high, rather than thin, flanges. With R33 wheels, we expect nearly 400,000 miles of service before the wheels are condemned for high flanges.

Trailer Train has experienced a few wheel failures due to rim shell-out and broken plates, mostly on 28-inch wheels. While very few failures of 33-inch wheels have been reported, Trailer Train has felt it necessary to approach each wheel manufacturer for a review of his procedures and observation of his quality control.

When the question of improved

MECHANICAL ADVISORY COMMITTEE

June session at Hollidaysburg, Pa., was attended by (l. to r.) C. S. Stringfellow (SCL); C. S. Patton (N&W); E. O. Joest (UP); C. A. Love (L&N); Chairman E. C. Meinholtz (MP); A. Vitale (PC); T. P. Hackney, Jr. (C&O/B&O); C. C. Ehlert (C&NW); A. J. Havlik (CB&Q). The group confers regularly with the TTX staff.



RUGGED RISER BOARDS

Steel hat sections which replace planks at trailer hitches represent higher initial investment but lower maintenance costs.

quality has been raised with wheel manufacturers, each seems to claim the best quality control in the industry. Trailer Train is asking: "If you claim the best of quality control, why do our inspectors reject wheels which have passed your inspection?" The fact that inspectors were rejecting 3% to 10% of the wheels offered to purchasers has disturbed Trailer Train—and should have disturbed the wheel producers.

• **Changed specifications.** After inspection of all principal wheel manufacturing facilities had been completed, the specification for TTX wheels was changed. Each carbuilder, when given an order for new cars, must specify, for both B28 and R33 wheels:

—Shot blasting of wheel plates to disclose lap seams or flaws by visual inspection;

—Ultrasonic testing of rims, including front faces to disclose most inclusions of foreign matter.

TTX Experimental Trucks

Months Service	Car Sets	Description
48	10	Teflon-lined adaptors with ½-inch lateral
45	10	ASF Ridemaster truck
39	10	SKF Dispatcher bearings with ¾-inch lateral
35	24	Clevite cartridge vs Timken roller bearings under same car.
27	5	Barber lateral-motion truck
21	1	Symington XL-70 truck
21	5	National Super C-1 truck
19	30	ASF modified Ride Control truck
On Order	25	Buckeye Elasto-Cushion
11	1	Rockwell Express truck truck

Even though these are the present requirements, Trailer Train will not be entirely satisfied until manufacturers will offer controlled, shot-peened wheel plates which should assure the best of quality in the highest strength wheel ever applied to a freight car.

• **Heat-treated axles.** Since its first car specification in 1958, heat-treated axles with raised wheel-seats have been purchased for Trailer Train flat cars which have 70- or 55-ton roller-bearing trucks. Such premium axles meet requirements for roller-bearing passenger cars. Beginning Aug. 1, 1968, the AAR will require roller bearings on all new freight cars. In order to meet the requirements of high speed freight service, it is our opinion that these cars should also have heat-treated axles.

An additional requirement for Trailer Train axles is ultrasonic testing, which guarantees the metallurgical structure. Ultrasonic testing of non-heat-treated axles has not been satisfactorily developed.

• **Truck shortcomings.** The standard freight car truck used today is really yesterday's truck modified. Basically, trucks are the same as those of nearly thirty years ago when the standard was the plain journal bearing with ⅜-inch lateral. Early friction snubbers in the spring groups evolved into today's spring-loaded steel wedges between the truck bolster and side frame.

Railroad acceptance of roller bearings was slow and they were first applied to truck sides in which the backs of the integral journal boxes had been machined out to accept the bearings. Pedestal openings were soon designed so side frames could accommodate roller bearings with adapters. The lateral of the plain journal was eliminated with the application of the roller bearing in either manner. The only lateral remaining was that between the side frame and truck bolster, because movement between the standard adapter and side frame pedestal is negligible. The only change ever made has increased the lateral between side frame and bolster by opening the gibs.

Wedges in truck snubbing controls are being renewed almost 100% on Trailer Train TOFC cars during heavy repairs which are now performed on seven-year cycles—approximately every 420,000 miles. Worn wedge pockets require restoration by welding and by the application of liners. We now know that extensive repairs will be required in these areas during the second cycle of heavy repair.

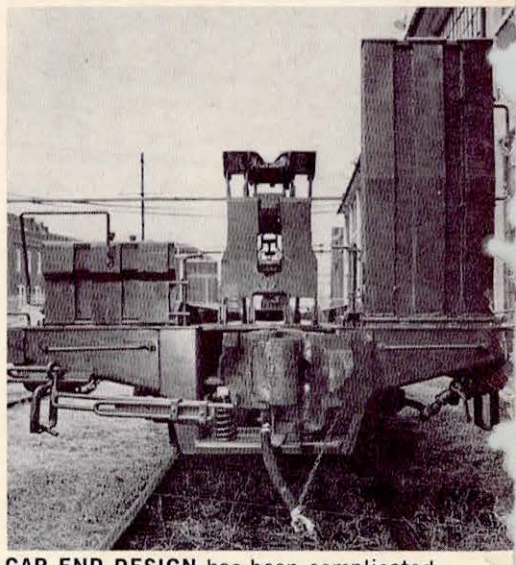
A few Trailer Train cars operating regularly in passenger trains at 80 miles per hour have shown excessive truck wear in only three years. Field inspections reveal that if train speeds exceed 65 miles per hour, the rate of wear of freight-type trucks will more than double, resulting in increased maintenance costs.

While some truck manufacturers are beginning to look to the future, tomorrow is coming very fast and the railroad industry does not have a final solution. Research is slow, test trucks in service are few in number and conclusive data on them will take nearly three more years to accumulate. Trailer Train has over 120 cars operating with 10 types of experimental trucks, seeking means of reducing maintenance problems (see the accompanying table).

• **Truck needs.** Today's freight car trucks were good yesterday. Although they are doing a job, they are not actually good enough for the high-speed, high-mileage transportation required by today's traffic. Tomorrow's success in competing with air freight and double- or triple-bottom highway operations will be influenced by truck manufac-

CONTAINER TRAFFIC, difficult to anticipate,

ALL-PURPOSE CAR:



CAR END DESIGN has been complicated by cushioning and longer couplers.

turers' research and ingenuity. Trucks must meet the following requirements:

—Lower maintenance features must be engineered into them;

—Trucks, square initially, must remain square to an established overhaul period when restoration must involve a minimum of manhours for renewal of expendable parts;

—Cushioning for vertical and lateral must incorporate expandable wear plates and composition materials easily renewable during wheel changes;

—A smooth ride must be achieved, controlled so forces will be less than 1 G vertical and less than ½ G lateral at all times.

Trailer Train standard brake rigging involves one 10-inch brake cylinder with fulcrums anchored to truck bolsters. From many inspections, it was obvious that a very irregular pattern of flange wear had developed. The Foundation Brake Rigging Committee offered its service and concluded that foundation brake rigging had no adverse influence on wheel life. While that study was being conducted, trial applications of other brake systems were being made to resolve two questions:

—Would there be uniform wheel flange wear if truck-mounted brakes were used? To avoid two tests in one project, 24 carsets of Wabcopac installations with cast-iron shoes were put in service (the only applications of this kind in the U.S.). These cars, in service for 48 months, are to be inspected in the near future for flange wear. Ten carsets of Absco truck-mounted brakes with cast-iron shoes were also put into service 25 months ago.

—Would composition shoes have any effect on wheel life? Nearly 500 carsets of Wabcopac brakes with composition shoes and 200 carsets of modified body-mounted cylinders are being used to test composition shoes. With these cars varying from only 19 to 40 months of service, there have been no conclusions.

has been met by TTX TOFC/COFC cars which are now being built by ACF and Pullman.

CHANGE HAS BEEN EVOLUTIONARY

UNCUSHIONED HITCHES of low-profile design and adjustable container pedestals installed on decks of new TOFC/COFC cars give them dual-service characteristics.

• **Structural problems.** The engineering staffs of Trailer Train and of each carbuilder have produced many improvements in body components over the past ten years. Structural maintenance costs are minimal. Center plates are the only troublesome items encountered in the course of heavy repairs. Cracking of the body center plate at its base and longitudinal wear require 40% and 20% renewal, respectively. Both conditions are being overcome by a more strict tolerance on application of the center filler to the body bolster. A heat-treated fabricated center plate used for nearly 18 months has shown little longitudinal wear and looks promising in our effort to eliminate renewals.

Early trailer hitches had to be flanked by riser boards so trailers would clear the collapsed hitch. The 3-inch oak was soon replaced by treated wood. An acceptable steel riser has now made unnecessary the renewal of wood risers every seven years at a cost of $210 per car. The cost of the steel type is $350, but life should be 20 years.

These high costs prompted Trailer Train management finally to ask manufacturers for a collapsed hitch 5½ inches high instead of 8½ inches, eliminating riser boards entirely.

• **Hitch maintenance.** Maintenance of hitches is very expensive. Hitch lubrication on AAR bills cost Trailer Train $219,924 in 1966. Repairs to hitches in contract shops cost $721,302, by railroads $277,827. The total of $999,129 in 1966 averages nearly $54 per piggyback car in service. The low-profile, tractor-operated hitch simultaneously improves operating conditions and reduces maintenance. Simplified design and improved lubricating procedures for screw-operated hitches could reduce the maintenance expense and extend the periodic lubrication requirement from four months to one year. With the AAR hitch lubrication rate at $13.95 for a two-trailer car, a significant saving will be realized when a 12-month lubrication cycle becomes practical.

Bridge plates on most TOFC cars are 48 inches long and weigh nearly 175 pounds. The new TOFC/COFC all-purpose car, equipped with a 15-inch-travel hydraulic draft gear, requires a 60-inch bridge plate weighing 230 pounds. Two devices have been developed which will assist in raising these larger plates to the vertical position for locking. One such device is presently being field tested.

Prior to 1968, the 43-inch F head coupler was standard on most Trailer

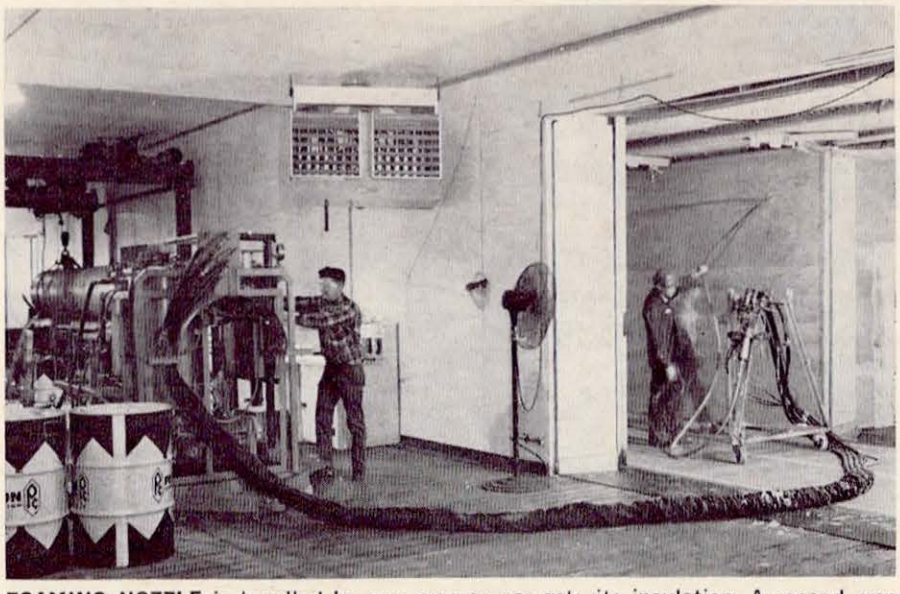
(Continued on page 80)

INSULATED CARS, destined for the Union Pacific, get a final inspection on the shipping rack at Pullman-Standard's Michigan

Foamed-in-place insulation gets a big thrust at P-S

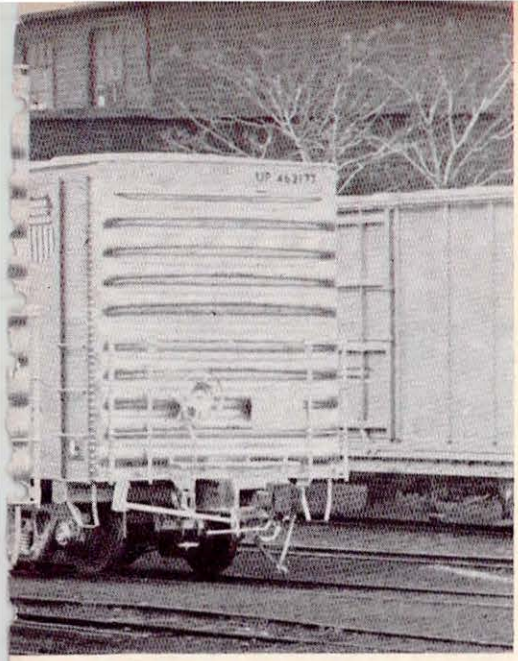
The insulating setup can now handle six cars a day; production could be increased sharply.

INTERIOR LINING of Pullman-Standard insulated box car is completed before the foaming-in-place operation begins.



FOAMING NOZZLE is handled by one man as car gets its insulation. A second man (right) follows to plug installation and observation holes. Foam materials are stored under temperature-controlled conditions. Pre-mixed foam is precisely metered.

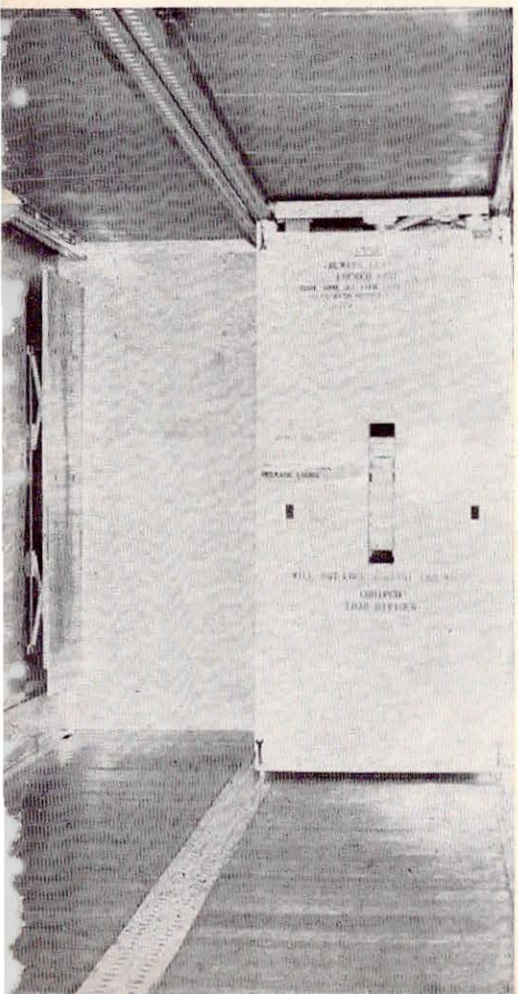
SMOOTH RIDE FOR LADING is provided by the P-S insulated box cars. The ride is also temperature controlled. Cars have cushion underframes, sidewall fillers and load dividers to be locked in place so that protective paneling bears against load.



City, Ind., plant before going into service.

Caution flags have been flying, for the carbuilding industry this year—but that did not stop Pullman-Standard from forging ahead into a production area where its past market penetration has been slight.

What's new from P-S is the insulated box car, with foamed-in-place polyurethane insulation. Thus far, the P-S Michigan City, Ind., plant has turned out 115 60-foot cars, most of them for assigned service in beer transportation. Union Pacific is getting 100 cars, Frisco 15.



• **Studies, and an inquiry.** Several elements clicked into place at once, as P-S made its decision to set up a new foam-insulation line. There had been past studies of the market, and they looked promising. Heavy order backlogs, in recent years, could perhaps be cited as a main reason why the builder had not made its move before this.

But in '68, backlogs were down, and there was a shop at Michigan City which could easily be made available. Then UP inquired for 100 cars. And, as P-S people put it, "with the opportunity at hand, and with our studies of the insulated box car field, the UP order was timely. It gave us the opportunity to expand into a new area of carbuilding capability."

These UP and Frisco cars come with all the trimmings—Keystone 20-inch-travel cushion underframes, Equipco bulkheads with protective paneling on the load-restraining side, Evans sidewall fillers, 10½-foot Camel plug doors, Philippine mahogany flooring. But the real story lies between the outer steel and the inner lining—in this first use, by P-S, of foamed-in-place insulation, in the first insulated box cars of any type built at Michigan City for several years.

The production line is actually a building within a building—a 352-foot-long structure constructed of foam-insulated aluminum-and-plywood panels within the Michigan City plant's Building 52, which years ago served as a paint shop.

• **Production can be boosted.** Foaming is done at two stations on the line. Capacity is currently six cars a day, but that could be increased sharply with little difficulty.

In the UP and Frisco cars, P-S used up to 2,300 pounds of foamed insulation—essentially, a five-inch blanket which may increase in thickness to more than seven inches at the roof peak or to about 10 inches in the corrugated car ends, to fill all cavities. Specifications called for insulation capable of holding specific temperature within specified limits for seven days—and, based on equivalents, P-S would have to use approximately double the thickness in batt insulation to get the same temperature control provided by the foamed material.

Machines and men operate in tandem to insure quality and consistency in the foaming process. On the line, a car first moves into a walled-off area where the heat is turned up between 150 and 200 degrees F. to raise the temperature of the car steel to about 90 degrees. This temperature is maintained at the two foaming positions, while car interior temperatures are held at 70 degrees.

The actual foaming operation is a blend of machine programming and manual control. Three men do the job—one to program the mixing and dispensing, one to operate the foaming nozzle and one to plug the holes through which the foam is inserted.

• **Past problems gone.** The material P-S is using makes the job somewhat simpler than it would be with the resins that were first used in foam-in-place installations.

John Tray, Michigan City plant manager, recalls that, originally, foaming operators would work first at points about 18 inches above the floor. Then they would hit spots about 40 inches up. Finally, they foamed through openings about seven feet off the floor. The problem was one of overcoming a surface-tension characteristic as the foam expanded.

Foaming material in use now, however, "has very little surface tension. We shoot each cavity just once, about midway up the car side." An additional benefit comes through simplification of the car-preparation process: With the surface-tension problem eliminated along with the consequent chance of foam-buildup forcing interior lining loose, there is no need for extensive bracing in the car.

Foam material—the resin, activator and Freon gas—is pre-mixed and metered. Each cavity gets a programmed shot of foam—which comes out of the nozzle much as shaving cream comes out of an aerosol can. Full expansion takes only about 45 seconds, 10 to 15 seconds during mixing and 30 seconds in the car cavity.

• **Quality checked.** Throughout the foaming, P-S kept a close eye on quality control—by both direct and somewhat more sophisticated methods. The direct method, simply, involved tearing a car down to make sure foam-flow had been obtained as planned and to confirm cycle foam-flow times for each cavity. Normal quality-test procedures involve an air test, in which any loss of pressure is a telltale on a cavity that is not completely filled. A smoke-bomb test pinpoints the location of a fault. And, of course, foam production itself is carefully controlled. Temperature control and metering are precise, and each batch of material is checked for reaction before foaming begins.

Over-all, P-S got the foaming operation started with a minimum of setup problems. The line was built in April, first cars were turned out in May, and the 115 cars were scheduled for completion by the end of June. ■

JUNE TRAFFIC POLL

PROPOSITION

Railroads, acting through the Association of American Railroads, prescribe standards with which shippers must comply in loading and securing many commodities in freight cars. These "loading rules" have been established to assure that loads will not shift en route, causing damage or representing a hazard to other trains.

QUESTIONS

1) Does the nature of AAR loading requirements place an undue penalty, in the form of increased cost, on rail shipments which you originate?

Yes . . . . . 12 No 45

2) If the answer above is "Yes," how do you respond to higher costs. For answers, see accompanying text.

3) Are railroads prompt in telling you of changes or pending changes which may affect your loading methods, either advantageously or disadvantageously.

Yes . . . . . 36 No 21

AAR loading rules get shippers' OK

The Association's requirements for loading cars are approved on an almost 4-to-1 basis by respondents to this month's Poll. Several revisions are suggested.

AAR loading rules are always a controversial subject. The rules, it is often said, place an undue cost burden upon the nation's shippers.

The cost-burden argument about the rules, however, is supported only by a minority of the votes of industrial traffic managers answering this month's Traffic Poll. Fifty-seven traffic managers responded to the Poll. Of them, 45 said AAR loading requirements place no undue penalty, in the form of increased cost, on rail shipments they originate. Twelve respondents said the rules do impose an undue penalty.

The voting margin was not as clear-cut when shippers were asked about the promptness of railroads in telling them about changes in loading methods. Thirty-six Poll respondents said the railroads were prompt—but 21 traffic managers voted the other way.

• **"Information depots."** Among those who said AAR loading rules are not unduly costly was Myron B. Smith, general traffic manager, Boyle-Midway Division of American Home Products Corp., New York, N. Y. Smith also had a provocative suggestion. The AAR, he said, "should establish "Information Depots" from which shippers could readily obtain the best loading methods and most recent technological developments for loading at the lowest cost and the best protection.

Smith went on to say that "shippers experiencing favorable results by improving upon AAR methods by use of various devices to protect the lading should be encouraged to show such developments to the appropriate AAR 'loading consultants.' Where such devices are proved to show reductions in, or elimination of, damage, their use should be encouraged by appropriate tariff provisions for free return and/or incentives in the rate structures when they are used."

Many Poll respondents indicated a belief that it should be mandatory for all railroads to enforce the loading rules uniformly. One person making that point was Charles W. Hall, traffic manager, Midwestern Area, Armco Steel Corp., Kansas City, Mo.

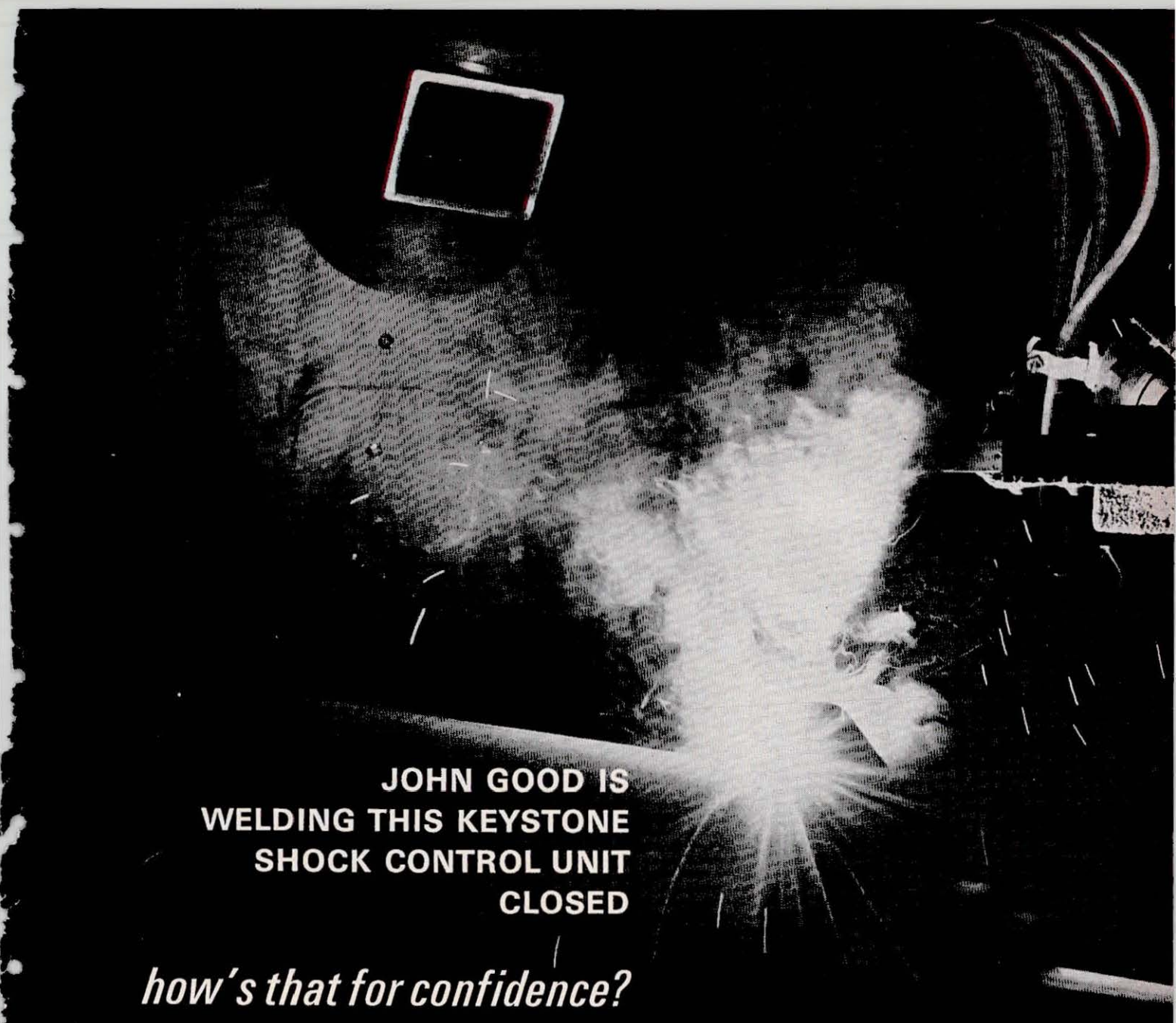
• **Western roads more liberal.** "The rules," Hall said, "are subject to enforcement by individual railroad inspectors and it would be unusual to find any of them that would agree. Western railroads are much more liberal than eastern railroads. . . Some railroads competing for business will accept loaded cars secured less than minimum and then secure [the lading] at their own cost, rather than be firm with a shipper."

Hall buttressed his argument for uniform enforcement of loading rules by saying: "Allowing any shipper to reduce his cost by non-compliance is a form of preferential treatment."

J. G. Manning, transportation manager of the Western Wood Products Association, Portland, Ore., discussed his attitude toward AAR loading requirements as follows:

"The Western lumber industry," said Manning, "ships thousands of cars of lumber annually on open-top equipment. The advantages accruing as a result of the ability to speed the process of loading and unloading our products by use of flatcars are many. Our industry recognizes the need for mandatory rules to govern the loading of lumber on flat cars. The inherent dangers accompanying unsatisfactory load-

(Continued on page 72)



JOHN GOOD IS WELDING THIS KEYSTONE SHOCK CONTROL UNIT CLOSED

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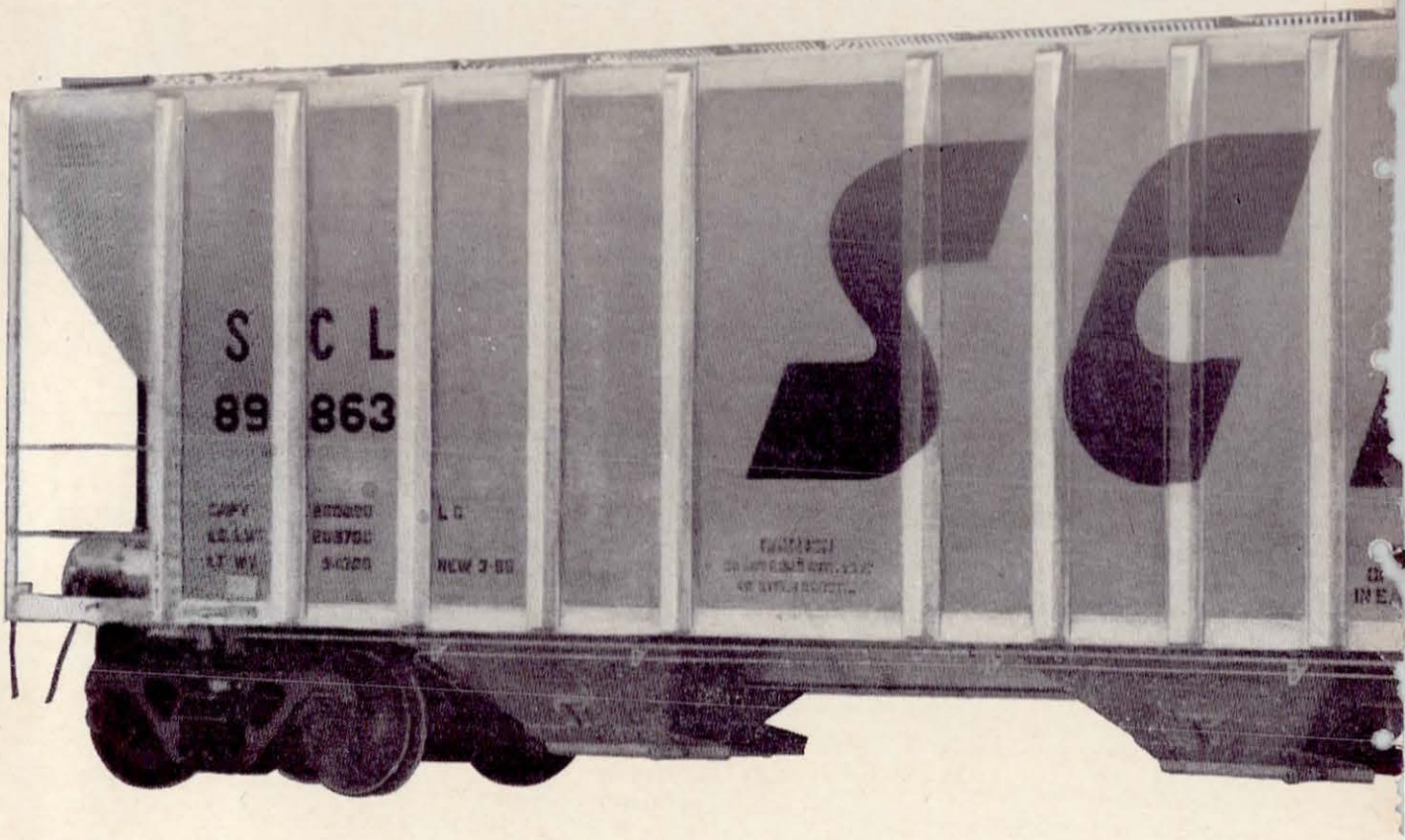
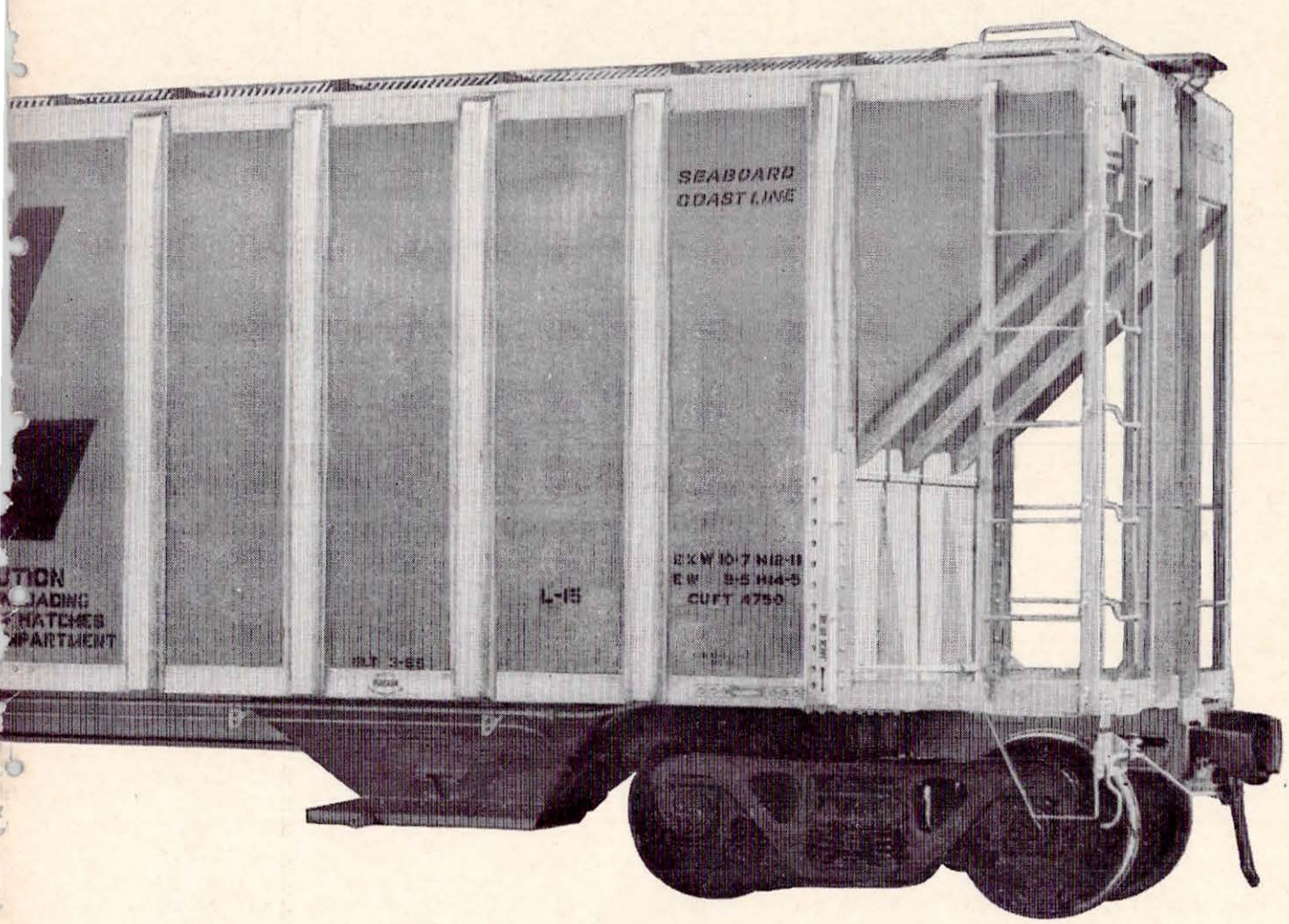
S.C.L.'s aluminum covered hoppers... a carload of extra advantages for shippers:



easy clean-out... better cargo protection... extra payload... better utilization.



The Seaboard Coast Line values its customers. Prides itself on giving service, and coming up with practical solutions to today's tough transportation problems.

That's why it specified aluminum bodies when it ordered 100 special, high capacity covered hopper cars: Reynolds Aluminum. Since that day, actual performance is demonstrating why aluminum-body cars are well worth their higher initial cost.

Bigger payload is one obvious advantage. A covered hopper with a body of Reynolds Aluminum has a capacity 10,000 to 16,000 lbs. greater than a comparable all-steel car. This gives shippers the opportunity to move more product with fewer car placements.

Aluminum-body cars also help protect cargoes. Their clean, smooth interiors are naturally corrosion-resistant and completely rust-free. They can be washed down and swept out easily, so chances of contamination are minimized.

And if you own your own cars, here's another thing to remember about aluminum covered hoppers. *They never require interior linings.* Never have to be pulled out of service for lining patch-up or replacement.

An aluminum-body car pays its owner—railroad or shipper—dividends to the very end of its dependable service life. It will bring over $2,000 more in scrap-value than a comparable all-steel covered hopper.

Any wonder, then, that the Seaboard Coast Line—alert to new ways to meet its customers' needs—looks to high-capacity, lightweight car bodies of Reynolds Aluminum? Something to think about, when you buy or lease rolling stock. For the full story, contact your local Reynolds office or write *Reynolds Metals Company, P. O. Box 2346-TM, Richmond, Virginia 23218.*

MEMBER RPI

aluminum

REYNOLDS
where new ideas take shape in
ALUMINUM

Circle 24 on coupon page 70

MEN AT THE TOP such as C&NW President Larry S. Provo (seated) and Vice President-Sales and Marketing John J. Kane, have supervised creation of the new marketing department with seasoned rail specialists and market-oriented outsiders.

C&NW fields a new marketing team

The road's new coach for sales and marketing men believes talent should be harnessed to serve both customer and carrier.

Given the right meshing of plans and people, Chicago & North Western may soon write a few new definitions into the railroad dictionary under the word "marketing."

Things are happening, in C&NW's whole traffic, sales, customer-service setup—and this particular happening is being directed by a man who took his first job in the railroad industry less than a year ago: John J. Kane, vice president-sales and marketing.

Kane isn't given to flamboyant predictions. He is confident he knows, however, where C&NW ought to be going. Now, he has the road's sales/marketing setup 100% restructured and about 90% staffed. As he puts it, "We have begun."

As a beginning, North Western's is a bold one. The plan is there, and it is one of the most comprehensive yet implemented on a railroad. Essentially, it reflects Kane's belief that sales and marketing are inseparable. And so what C&NW has is a sales and marketing group, with internal departments, covering marketing planning, rates and divisions, sales, industrial development, transportation services and cost and budget administration. In Kane's setup, the first four represent line functions, the last two are staff.

● **The old and the new.** C&NW President Larry S. Provo points out that the new organization is a blend: "We have always had a staff of seasoned railroad specialists. They've been the mainstay of our operation. They know car capabilities and potentials. They know the intricacies of terminal schedules. They can do cross-checking in their sleep, and I think some of them do dream about alternate routing. . . . These are the men chiefly responsible for the North Western's past acceptance as an outstanding transportation company, and we're going to go right on making full, productive use of their

JOHN J. KANE, vice president-sales and marketing; appointed to that position with C&NW in Sept. 1967.

M. H. DECOSTER, assistant vice president and director-market planning, a corporate development man since '66.

WALTER E. BRAUN, assistant vice president and director-rates and divisions, has been with the railroad for 34 years.

talents. Supplementing them are men who have joined us in new positions —men of high achievement in industries whose success is inseparably glued to marketing, from conception of products and services to effective use by the customer, from anticipation of the customer's changing needs to the customer's own resultant service and improvement. This inflow of a new kind of marketing thinking is contributing changes that are basic, changes that are new to railroading."

For better or for worse, Provo says, "this is an age of specialization. We've put professional marketing men in marketing slots, sales experts in sales slots, customer-service men in customer-service slots and researchers in research slots."

Jack Kane makes it clear that what he wants is an integrated organization with planning capability. Most railroads, he says, have the talent and the ability to do a good sales/marketing job—but the key lies in harnessing this talent and making it work for both customer and carrier.

● **Specialists, but salesmen.** North Western, he points out, has had commodity specialists in the past: "But they were essentially salesmen. As such, they were primarily interested in today's revenues. This left them with little time to direct their knowledge to planning. This has to be recognized, that the traditional 'traffic' man's concern is with gross revenues. He's not concerned with the makeup of the gross, or the costs associated with it. He doesn't look at profitability. What we're trying to do is to provide the ability to look at service from a planning and profitability standpoint—because when you come down to it, in the long run, the best way we can benefit the customer is as a really profitable carrier."

Goals reflect this outlook. North Western is fully aware that the name of the game is net, not gross. Its over-all aim, toward which the new programs are directed, is not merely to pour more sales dollars into company coffers. The target, or one of them, is a 1% annual improvement in the ratio of net to gross.

Unquestionably, Kane says, "what we are embarking on is the most significant change this railroad has undertaken in the past 10 years"—and a decade with C&NW embraces a lot.

● **The new trend on C&NW.** North Western's sales-and-marketing VP comes back to Larry Provo's comment on specialization. The railroad, Kane recalls, made a study of shipper attitudes. Over-all, shippers liked North Western—with about 20% mentioning it as doing the best job for them, compared with an under-10% ranking for the next-best road.

But, Kane says, "what about the customers who didn't mention C&NW? We had the necessary equipment and the plant to provide needed increases in service. Still, it was apparent that the marketing function needed an overhaul. Instead of trying to be all things to all people, the traffic organization had to begin specializing—dividing time and abilities between specific planning and problem-solving functions that together could streamline procedures and offer improved programs with speed, accuracy and reliability."

In the past, he points out, "the record showed that each time C&NW enjoyed rapid success, you could point to specialization. Usually, one man had the over-all responsibility for moving the project ahead and the ability to cut across organizational lines to put the whole package together. He could spearhead the equipment planning, the rate policy, the proposal to shippers and the monitoring of our accomplishment."

● **Stress on planning.** The sales and marketing group was designed, then, to make specialization click in across-the-board fashion, emphasizing planning.

Here is how North Western's six-department sales-and-marketing organization will work:

Marketing Planning, Kane says, is the "pivotal" department in the group: "It may be true that the most important department in any company is Sales—but Marketing Planning is the catalyst for programming our action to meet the customer's basic transportation requirements."

Within the marketing planning organization are a market-research section and, for the time being at least, eight marketing managers who will operate in sharply-defined fields. As Kane sees it, the scope of the commodity - specialist operation may change: A logical case could be made for a dozen marketing managers, and some of the eight groups may be subdivided; then too, "as we get more sophisticated—and pick up new kinds on business—we may well need more people in this area."

Currently, market managers are working on grain and grain products; perishables and food products; lumber and construction materials; pulp and paper; coal, chemicals and petroleum; ores and metals; automobiles and manufactured products; and integrated transportation services.

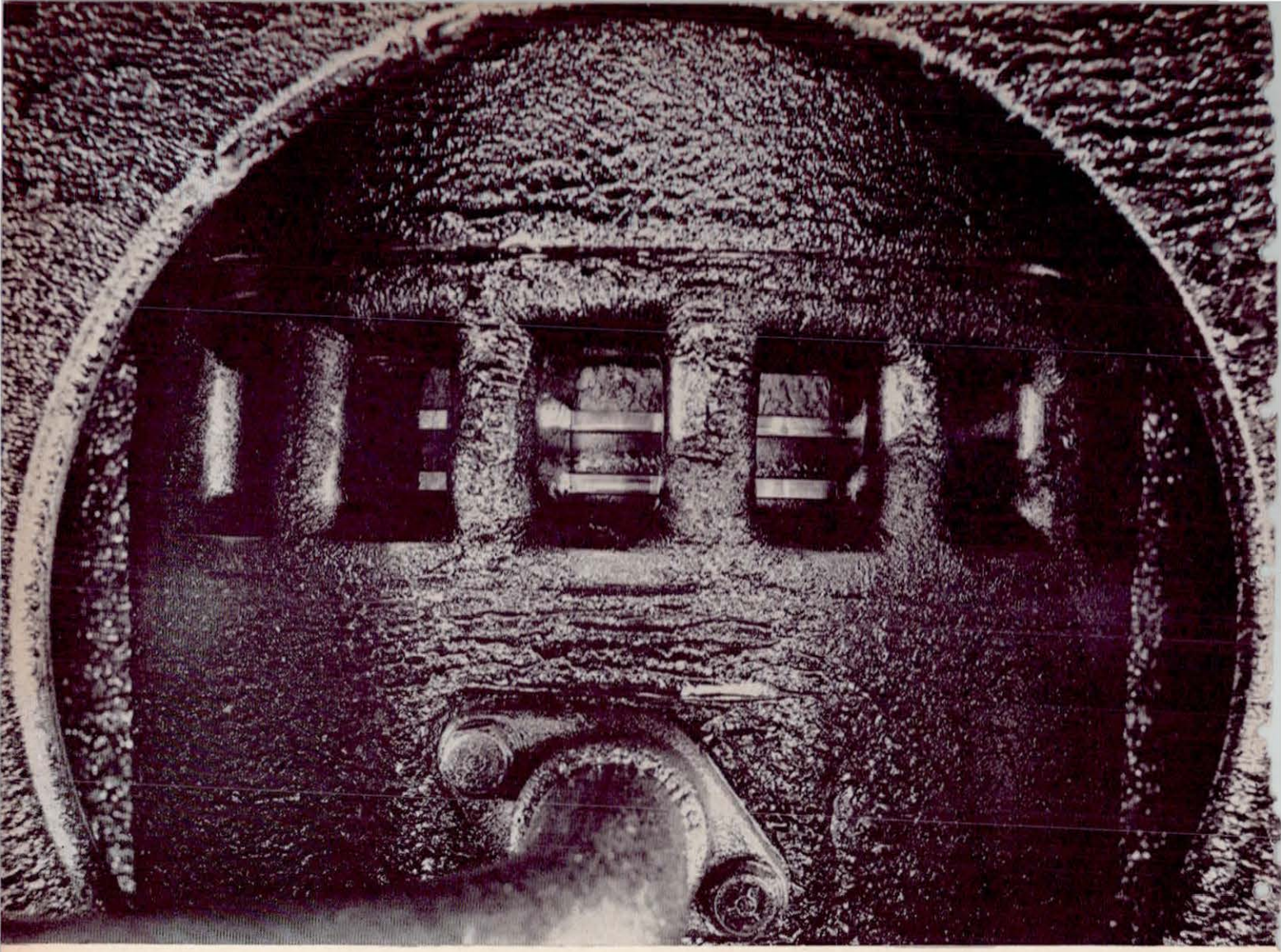
These eight men, Kane says, "will be totally responsible for liaison with key shippers, for measuring and predicting growth characteristics in their assigned industries, for identifying the equipment and service needs of those industries and for doing the total planning required to meet those needs—planning that will then be implemented by the sales and customer-service organizations."

● **Covering the field.** In their work,

IVER S. OLSEN, assistant vice president and director-sales, has been with C&NW 48 years, all in Traffic.

J. E. SHAFFER, assistant vice president and director, industrial development, formerly worked for New York Central.

A. M. HANDWERKER, director-cost and budget administration, has been with the C&NW for the past 18 years.



"This engine's fairly clean."

You're looking through the No. 3 cylinder air box inspection covers of identical EMD SD-40 engines in comparable service on the Western Maryland Railroad. Photo above, *left*, shows engine condition after 93,847 miles since factory delivery on the most widely used conventional oil. Photo above, *right*, shows condition after 94,360 miles since factory delivery on high-dispersant Shell TORNUS ™ Oil. Look at the difference.

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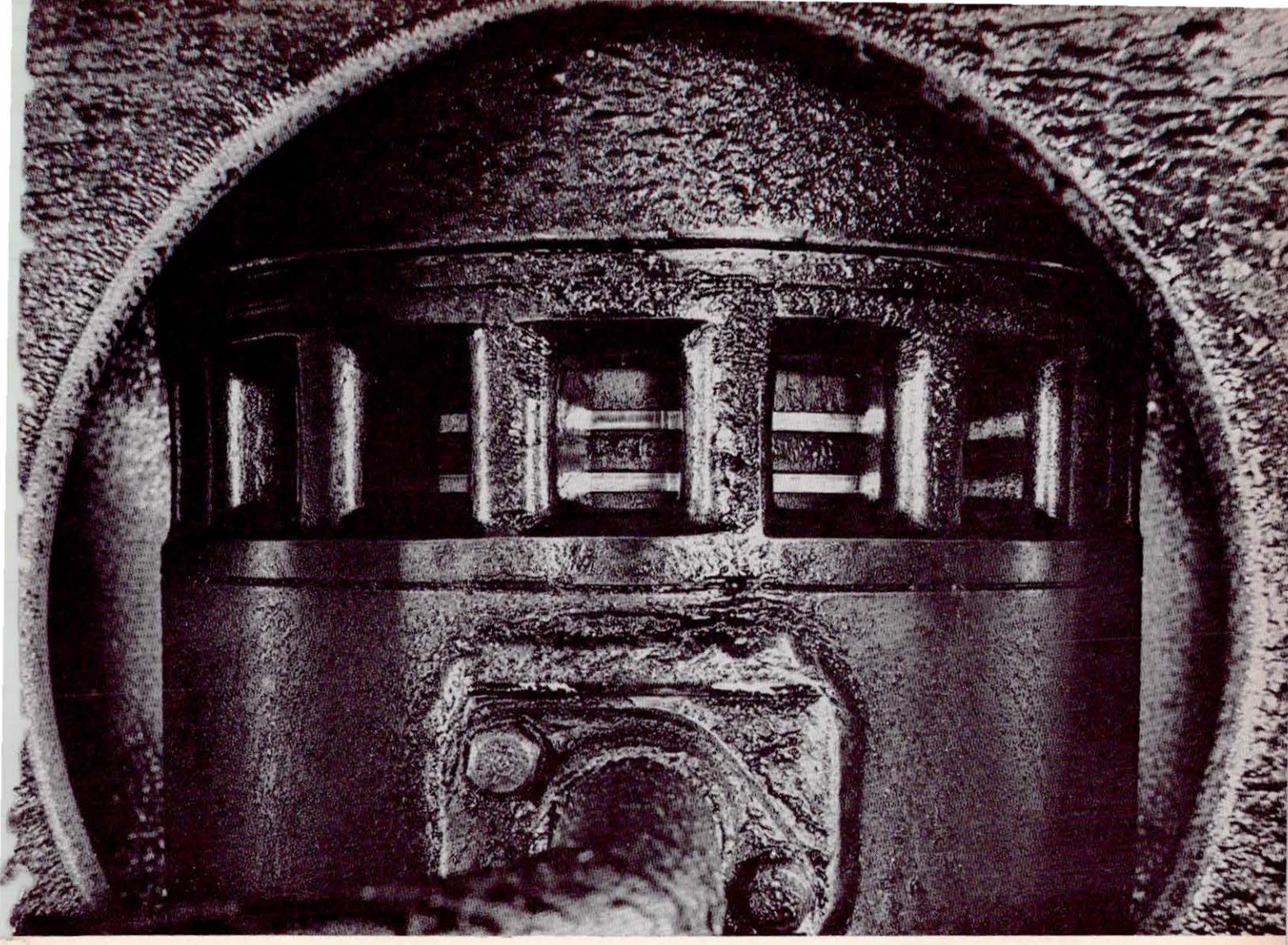

"This one's $25,000 cleaner."

"What really counts is power utilization. And that's what TORNUS gives us."

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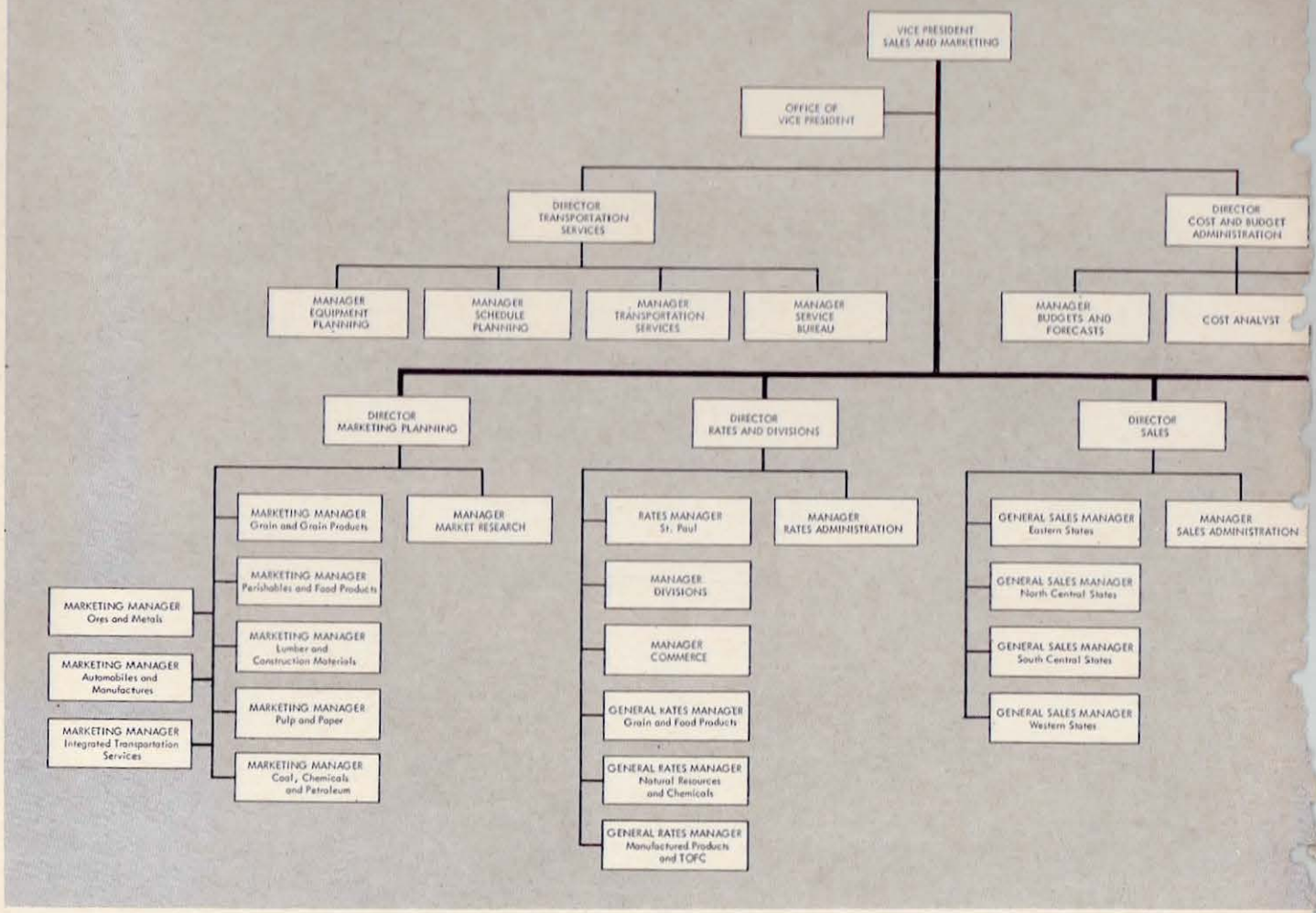
Sales/marketing, C&NW style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MARKETING MANAGER Lumber and Construction Materials
MARKETING MANAGER Automobiles and Manufactures
MARKETING MANAGER Pulp and Paper
MARKETING MANAGER Integrated Transportation Services
MARKETING MANAGER Coal, Chemicals and Petroleum
RATES MANAGER St. Paul
MANAGER RATES ADMINISTRATION
MANAGER DIVISIONS
MANAGER COMMERCE
GENERAL RATES MANAGER Grain and Food Products
GENERAL RATES MANAGER Natural Resources and Chemicals
GENERAL RATES MANAGER Manufactured Products and TOFC
GENERAL SALES MANAGER Eastern States
MANAGER SALES ADMINISTRATION
GENERAL SALES MANAGER North Central States
GENERAL SALES MANAGER South Central States
GENERAL SALES MANAGER Western States

the marketing managers will be dealing with industries which now account for 92% of C&NW's gross freight revenues. Kane figures they will be spending between 25% and 40% of their time in the field, in contact with the assigned industries. Internally, they will work with other line and staff group members—with Rates and Divisions on pricing, for example, and with Transportation Service to help design equipment and program allocations. All of this effort is focused on providing tools for Sales in its vital job of getting its message across in a meaningful way. At the same time, it is also the managers' job to monitor marketing and sales performance—and to get action in cases where service correction or improvement is required.

These more-or-less standard duties of marketing managers, however, are only a beginning. They are going to be asked to "plan" in more than the usual sense.

• **Three-year look ahead.** Beginning this year, Kane says, each of the eight men will author a three-year "market plan." Taken together, these plan—hopefully—can serve as an over-all business guide for the railroad. The format, bringing together forecasting and budgeting, has been established. Kane expects the first try at the project to be finished by Oct. 1.

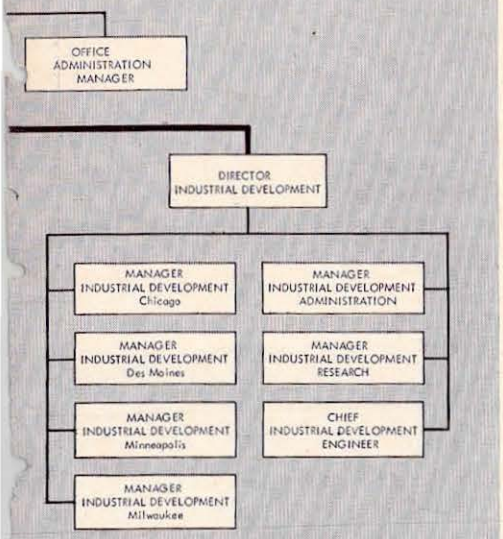
North Western's top marketing/salesman is candid: "The first time around, it may be a shambles. But we'll get with it. Ultimately, we may stretch the period out to five years—and, of course, the plan will be updated each year."

Like the commodity-management setup, Rates and Divisions has also undergone a restructuring — including a move to "determine rates on a commodity concept, rather than on a regional or geographical one. We've revised commodity classification assignments, to get more effective use of rate-making specialists by grouping like commodities together." North Western now has three major groupings—manufactured products and TOFC, grain and food products, and natural resources and chemicals—with each group headed by a general rates manager who works in tandem with the marketing managers from the Marketing Planning staff.

The R&D operation, Kane says, "will be responsible for the communications required in establishing and administering the rate function under all conditions—and for the continuing audit on rate structures for every individual item the railroad handles. That audit will take account of economic content, competitiveness and the applicability to the customer served."

• **Sales restructuring.** From the standpoint of that which is immediately visible, perhaps the greatest changes have come in the Sales Department—which once consisted of more than 70 offices scattered across the country and is now concentrated in 22 major and more strategic sales locations, each under the supervision of a regional sales manager. These are the key men in a field which C&NW has divided into four geographical areas. In charge of each area is a general sales manager—and these four men, reporting to the assistant vice president-sales, are all based in Chicago, to be close to central-control.

The direct sales effort is in the hands of 135 district sales reps—who have been relieved of routine duties such as car-tracing so they can spend full time



"presenting programs developed by the total Sales and Marketing Department, and auditing and discussing North western's performance and shipper suggestions for new programs."

Predictably, C&NW will be getting a large-scale assist from the computer in the customer-service area. A new Spectra 70 installation for all regional sales and operating division locations is scheduled to come on-line in August, and to be fully operational in September.

Car-tracing now accounts for more than 70% of the customer-service inquiries received in North Western offices. Through Car-Fax, one of the first railroad-industry centralized tracing setups, C&NW has been able to do an adequate job—but with Car-Fax, an inquiry has to be phoned to the central office in Chicago (Ravenswood). Then a file-search has to be made, and the reply has to be phoned back to the inquiry point.

● **What Spectra will do.** With the Spectra 70 network, each regional office will be able to query the computer direct and the reply will be flashed back in visual display on a cathode-ray tube at the point of inquiry. As Kane puts it, "this computer network will allow a level of customer service where we will be able to do in a matter of a few seconds what used to take hours."

Like the other three line departments, Industrial Development has also undergone a new-look treatment to produce what Kane refers to as a "complete line of professional services, geared to finding the customer the best possible plant-site location consistent with his needs—the least expensive point from which to efficiently produce and distribute his product."

One aspect of the change: The appointment of an industrial development research manager, to do geographic trend analyses and computer applications as they may apply to plant-location problems.

Backing up the line people will be the two staff departments—Transportation Services, and Cost and Budget Administration.

● **The "bridge" department.** Transportation Services, in particular, will have wide-ranging responsibilities, internally and externally. In effect, it will be a bridge between Sales/Marketing and Operating.

Transportation Services people will be both product developers and product-quality controllers. They will work with various sales and marketing personnel to try to determine shipper requirements in advance. And they will help to monitor realistic performance standards. Equipment utilization and equipment-acquisition planning will be part of the section's C&NW schedules as well as those of competitors.

One new twist will be in the appointment of customer-service coordinators, to be located at North Western's nine operating division headquarters points. Regional sales offices will have assigned service managers—but the nine coordinators will be sitting next to Operating Department superintendents, and it is their responsibility to "respond to extraordinary regional service-office requests for information or action on current problems of any kind that involve customer service, and to implement whatever action is required." These coordinators will also monitor over-all divisional service performance, look for potential problem conditions, gather data on recurring problems and recommend solutions.

● **Again, emphasis on planning.** Cost and Budget Administration is another new-wrinkle area. As Kane plans things, C&BA people will be doing far more than the "administration" in the department title indicates.

There will be, of course, the usual analyses of revenues, expenses, profits, forecasts, budgets. There will be measurements of results against plans and predictions. And there will be planning.

Kane may be new to railroading—but he has a fine grasp of the dollar signs involved, as he points out that "there's a strong economic content to railroading. There's high capital investment. There *are* no small investments. We've got to get control of our true costs, to get a feel for the implications of various things we might do."

C&BA, in Kane's view, should be able to do a lot of preliminary, in-advance-of-project cost analysis—to help Sales/Marketing decide whether a particular program should be dropped or progressed.

● **New help for shippers.** Equipment requirements are topmost in the concern for planning. North Western wants a good yearly forecast of equipment needs for major industries or commodity groups—a forecast which could be updated at least monthly, taking into account seasonal or other predictable fluctuations.

Kane's point is that most major shippers are well aware of their requirements—"but maybe we've just never asked, before. We have to prove to the shipper that when we know his needs, we can—and we will—react to them. We've got to earn his respect."

Kane summed up the whole set of goals, not long ago, in talking to other North Western officers and supervisors. This is how he put it:

"We must have constantly in mind the fact that in today's complex economy—where many of us work on mils, if not on percentage points—any improvement in the final service represents a corresponding improvement in profits or in efficiency, which generally improves profit.

"The most outstanding successful industries have resolved profit problems by becoming market-oriented, or in plain language, customer-conscious. We have to do the same.

"We've got to think progress in all aspects of the business—operating, sales, planning.

"We have to apply all of our natural abilities, talents and resources to the solution of *all* shippers' problems—based on a thorough understanding of what those problems are and what their solutions can mean to our mutual business.

● **The sum-up: "We're on our way."** Kane is not expecting a miracle tomorrow, and C&NW customers should not be, either. There are physical changes to be made, he reflects—"new equipment to be installed and tested, training programs to be implemented. More important, there are new responsibilities to be understood—and mastered." ■

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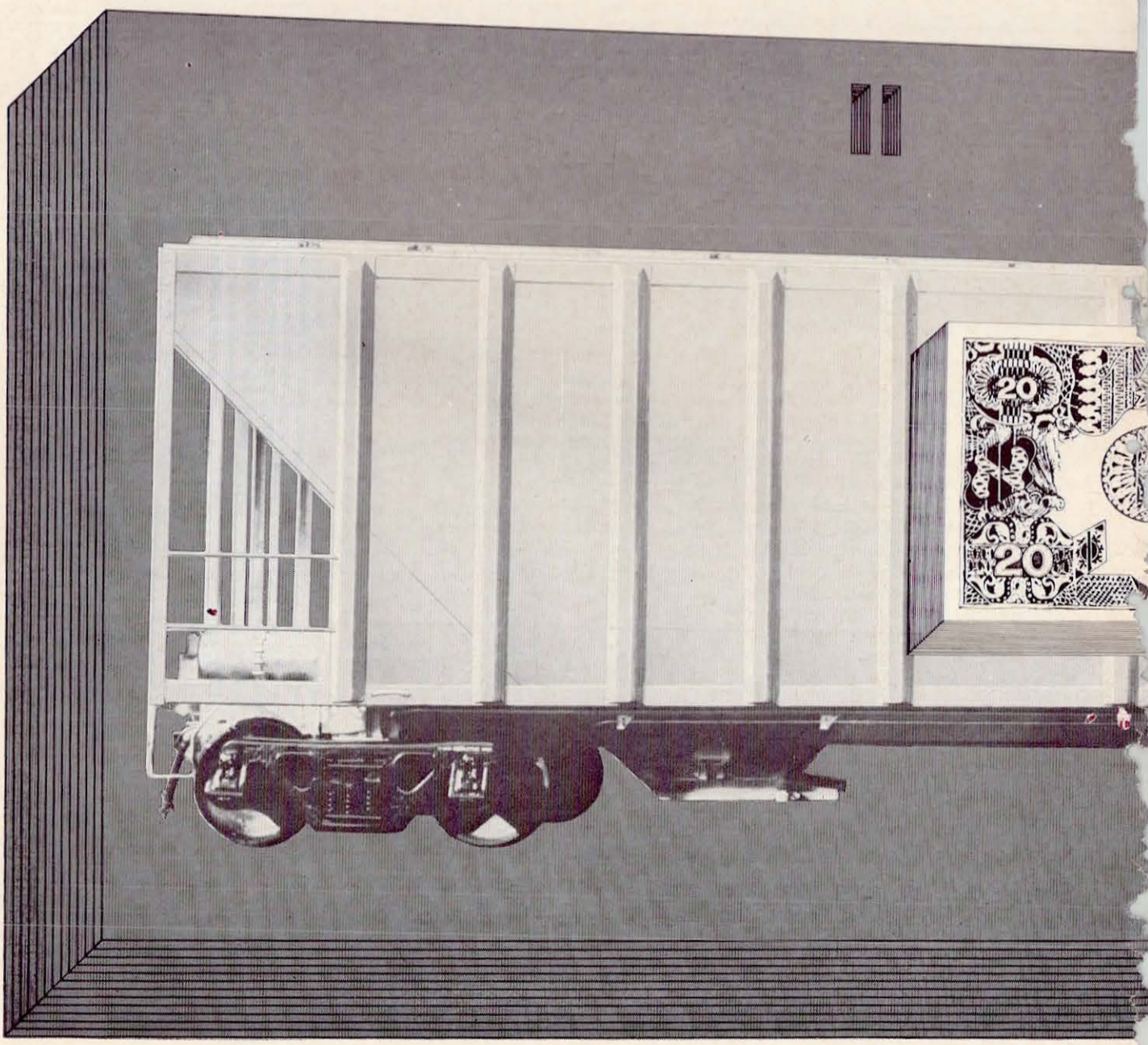

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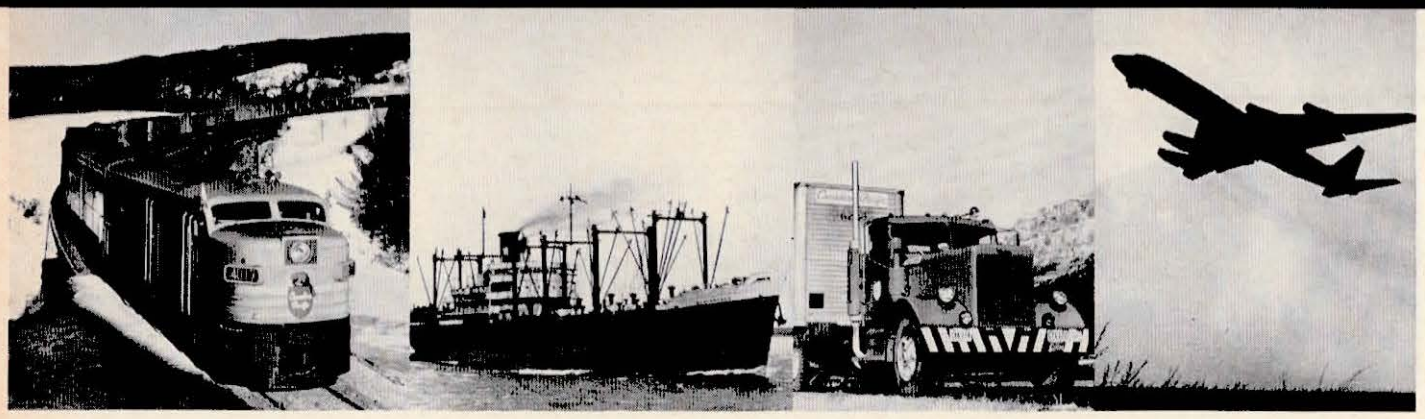

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WALTER TAFT

WATCHING WASHINGTON

RAILS LOSE INGOT MOLDS CASE—The railroads have lost the Ingot Molds Case, which they embraced as a good one in which to win more rate-making freedom. The setback came last week when the U. S. Supreme Court upheld a 1965 decision of the ICC which condemns reduced railroad rates published to bid for shipments of ingot molds moving over truck-water routes from Pittsburgh, Pa., to Steelton, Ky. Railroads directly involved are Penn Central and Louisville & Nashville, but the industry generally supported them.

COST BASIS THE ISSUE—The condemnation is based on the Commission's finding that the truck-water service is the low-cost mode on the fully-distributed-cost basis. That basis is used generally by the Commission. The railroads assailed it in court, contending that it is not in accord with the Interstate Commerce Act's Section 15a(3), the rate-freedom provision. Their position is that the only proper test is whether proposed rates exceed out-of-pocket costs and are compensatory. The Penn Central-L&N rates were defended on that basis.

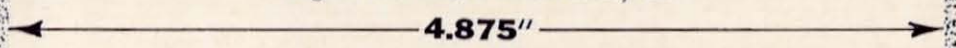
SUPREME COURT NOT SOLD—Prospects for a win seemed good. The railroads had won in the lower court—the U. S. District Court at Louisville, Ky. And they had the support of the Departments of Justice. So the Supreme Court's adverse ruling came as something of a surprise. It was in an opinion by Justice Thurgood Marshall. Justice William O. Douglas was the only dissenter.

BASIC ISSUE SEEN UNRESOLVED—One of the majority, Justice John M. Harlan, filed a separate statement to call the decision "unsatisfactory" because, he said, the cost-basis issue had not been resolved—it has been left where it was until the Commission reports in No. 34013. That proceeding involves rules for cost evidence in competitive-rate cases (RA, June 3, p. 24).

COST CASE TO FORE—Harlan's comment pointed up the Court's preoccupation with letting the Commission decide No. 34013 before it is required to take a policy position on the cost issue. The District Court made a decision which, "for all practical purposes, made the rule-making proceeding moot," Justice Marshall said. Meanwhile, he did make clear the Court's view that Section 15a(3) gives the Commission discretion to use either full costs or out-of-pocket expenses in determining which of competing carrier modes has the "inherent advantage."

TRUCK

A typical truck engine has a bore of 4.875 in. Thus there is a circumference of frictional contact between piston and cylinder wall of 15.3153 in. This circumference encloses 18.665 sq. in. of combustion area—for what you might call a "friction vs. power" ratio of about 5 to 6. That is, in an engine this size, it takes nearly an



inch of contact between piston and cylinder wall to produce a square inch of combustion area.

The oil companies have done such a wonderful job of fighting metal-to-metal friction that it's easy to forget that there is a tremendous amount of *fluid* friction between the sliding pistons and cylinder walls of a reciprocating engine.

Why trains carry a given load with so much less fuel

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LOCOMOTIVE

A typical locomotive engine has a bore of 9 in. There is a circumference of frictional contact between piston and cylinder wall of 28.2743 in. The circle encloses 63.617 sq. in. of combustion area for a "friction vs. power" ratio of about 4 to 9. That is, in an engine of this size, it takes less than one half inch of contact between piston and cylinder wall to produce a square inch of combustion area—*with only about half as much opportunity for fuel-consuming friction as in the truck engine.* This friction is a sizable factor. One automotive manufacturer has estimated that at 30 mph, more power is expended to overcome friction within the engine than is delivered to the rear wheels. In fact, now that engine parts are fitted so tightly, friction has become such a factor that they don't give you a crank with even a small car any more.

(It's not "compression" you brake with when you shift to a lower gear on a downgrade. It's *friction.* Actually, the compressing in one cylinder is balanced by the simultaneous decompressing in another.)

9"

One of the laws of geometry is a controlling factor in modern mass transportation. The law, worked out in some detail at the left, is this: the bigger the cylinder, the less wall surface it takes to enclose a given volume. Thus it is that for each cubic inch of engine displacement, there is only about half as much opportunity for piston-cylinder wall friction in a giant railway locomotive as in a highway truck.

But the reason why a gallon of fuel gets a lot more done on a railroad than on the highway goes even further than this. Not only does each unit of the expanding fuel meet with less resistance inside the locomotive engine, it meets with less resistance on the railroad track, too. A truck's pneumatic tire is constantly flexing as it rolls along —with tremendous friction and resistance to forward movement. (That's why a tire gets so hot.) On the other hand, the most friction-free movement known to man is of an unflexing steel wheel rolling on a steel rail.

All in all, the train has a tremendous advantage over the truck in operating economy.

Today, the railroads and their suppliers are fast developing other train advantages, too: bigger and more efficient cars, new loading and unloading devices, better signalling and communication, wider computerization.

How do railroaders keep up with all this? Every Monday, they turn to RAILWAY AGE. What a place to offer *your* advantages!

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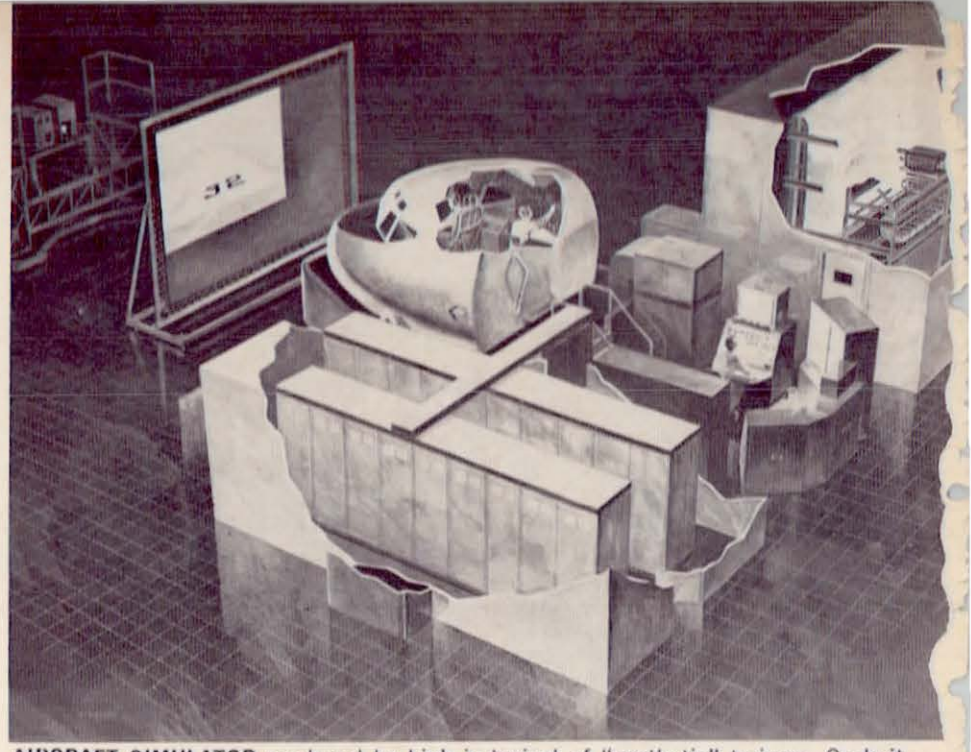
RAILWAY AGE

the transportation weekly

tion of the new railway age)

Simulators: Railroads look to new training tool

Training for tomorrow's enginemen could be much like that given today's airline pilots.



AIRCRAFT SIMULATOR produced by Link is typical of "synthetic" trainers. Cockpit mock-up overlooks screen on which movie gives landing and take-off practice.

It was hardly an optimum freight train. All loads were on the rear and it was tough to control over the short, steep grades on this division, particularly with dynamic brake on only two of the units. Hardly the sort of train to give an engineman who had never before been over the line.

But there he was in the cab, hand on the brake valve, and rolling out before his windshield was a downgrade stretch of unfamiliar track. As the line leveled, he moved to the throttle. Suddenly the cab of the accelerating train shuddered violently as brakes went into emergency. "You got a drawbar 140 cars back," said the instructor back of him. Then, impassively, "Let's try that again."

• **Over and over.** The train separation would delay none of the road's service and had involved no equipment damage. The entire sequence had taken place in a simulator—a training device which is attracting more and more attention from railroads. The instructor would restore the situation so that shortly the apprentice engineman would again be coming down the same hill with exactly the same train—something which could never be achieved (or afforded) in on-the-road training.

Railroads several years ago took a page from the aerospace industry: diagnostic locomotive testing. Now, they are in the process of taking another page, as they move to adopt locomotive simulators. Transit authorities are also looking at this concept for training of motormen.

This is the result of a searching appraisal which has been under way for some time on the methods for training the operators of tomorrow's trains. Several railroads apparently are leaning to an instruction technique long used by the airlines and the military.

• **Economical, effective.** The economics and effectiveness of such railroad training equipment could apparently duplicate the experience of the airlines. Today's big commercial jetliner represents about $2,000 per operating hour, exclusive of crew costs, when used on training flights. A flight simulator costs about $200 per hour—a 90% saving in costs. The flight simulator has another, and even more significant, advantage. Simulation enables the student pilot to practice over and over those functions in which he has experienced difficulty. And this practicing is done at no risk to the pilot or to a multi-million-dollar aircraft.

Among airlines, it is not just the high and mighty which have simulators, or have them on order. Eastern, United and Canadian Pacific are typical of the big operators. But local-service Piedmont Airlines is to receive a Boeing 737 simulator that will be a companion for its fleet of only a dozen 737s now on order.

Military services and National Aeronautics and Space Administration have made extensive use of simulation for pilot and astronaut training. In NASA's case, space flight is of such a nature that virtually all instruction must be simulation. Driver training simulators for highway vehicles are also gaining in popularity.

Overseas, British Rail has had a locomotive simulator which was part of a retraining program for enginemen who would be transferring from diesel or steam locomotives to electric units as BR electrification was extended. Probably next, and fairly soon, will be a simulator for a U.S. diesel locomotive.

• **The beginning.** With their air brake instruction cars, railroads have actually had an elementary type of simulator for years. But today's simulation is many times more sophisticated than any sort of traditional air-brake-car instruction could ever be.

The train simulator of today would have five subsystems: the cab, the motion system, the visual system, the sound system and the computer. There is also the instructor's station, which places him behind the trainee for observation of the responses to visual and audio indications. A digital computer, the heart of the simulator, controls the environmental systems—motion, sight and sound.

The cab is reproduced in full detail. On a screen ahead of the trainee would be a movie of the route for which he is being trained. Cab motions would correspond to the environmental inputs, and the computer would also regulate this motion in response to the changes in brake and throttle made by the trainee. Signal aspects would be under control of the instructor with a spot of light superimposed on the picture displayed upon the screen in front of the cab window.

The digital computer, heart of the simulator, modifies the trainee's environment on the basis of inputs from cab controls, the visual system, the instructor's control and a taped program containing information on grades, curves, signal aspects and sound-system cues. Computation incorporates the ef-

fects of slack in a train so run-in and run-out may be felt though the motion system. The train is divided into a number of blocks for calculation purposes, allowing the effect of grades and curves to be varied throughout its length.

● **Mostly osmosis.** The simulator training cycle would differ considerably from the "on the job" instruction of today—a process which might well be described as osmosis. Present trainees, one railroader has pointed out, "frequently learn train handling from men who should never have been teachers."

For the railroad, simulator training can be more brief but much more highly concentrated than is possible in actual locomotive cabs. It can also be used for retraining under new conditions, such as the introduction of trains consisting entirely of cushion-underframe cars. And a standard level of engineman training, recognized by unions, may be established.

The trainee is able to practice smooth train handling and to drill on the control necessary on curves and grades. He may be checked on response to emergency conditions which can be set up by the computer or the instructor — conditions which would never be safe or economical to reproduce in the handling of an actual train. The instructor can vary not only train length and weight, but also adhesion conditions and other features which can affect operation.

● **Railroad market.** The potential railroad market has attracted producers of aircraft simulators—Canadian Aviation Electronics, Conductron, General Precision Systems and Melpar. Others, such as Curtiss Wright, apparently flirted briefly with the railroad trainer concept.

Some larger railroads have expressed an interest in buying up to five of the training systems. If military practice is duplicated, a single trainer might be used for the simultaneous instruction of more than one trainee. There has been general agreement on the part of most railroads that the Electro-Motive 3,600-hp SD-45 unit should be the prototype for the cab and controls.

The digital computer used with today's trainer, however, can be readily programmed for other types of locomotives. The lack of such versatility was a major reason for abandoning the analog computer which was used with the British locomotive simulator put in service several years ago. Various types of automatic brake equipment can also be simulated.

The equipment could be installed in a building, in a highway trailer, or in a baggage car. Railroads are apparently weighing all three types of enclosures. Many of the military trainers are installed in one or more trailers which may be moved from site to site and can be put into service with relatively little set-up time upon arrival.

The training device concept originated nearly four decades ago with the famous Link trainer, which gained fame as it was used by thousands of military pilots in World War II. The Link Group of General Precision Systems has continued to refine and produce such synthetic training systems. Today it makes simulators for a wide range of commercial and military aircraft.

GPS also produces the Link Cart, a device for training ships' officers and helmsmen in radar-aided ship handling. Western Railroad Supply is handling railway industry sales for GPS.

Melpar, a division of Westinghouse Air Brake, has been producing a range of military aircraft and helicopter simulators. Like the others, a general purpose digital computer will be utilized by Melpar. Wabco's early work with aircraft simulators represented a combined effort of Melpar and what is now the Wabco Signal and Communications Division. In the railroad trainer, however, Melpar would be responsible for the entire effort, design and production.

Following the market

Conductron, a subsidiary of McDonnell Douglas Corp., entered the simulator field because parent McDonnell Aircraft had the contract not only for the NASA Mercury space capsule but for the instruction equipment to go with it. Later, McDonnell built two simulators for the Gemini spacecraft and when the space program offered little more potential, turned to commercial airlines as trainer customers. This has been a big market for Conductron in the past two years.

For some time these potential suppliers have been working with railroads, first on developing their simulation requirements and, more recently, on formal specifications and proposals. There seems to be general agreement that hardware delivery would be about a year after the first order. As recently as last week, no railroad had yet made a firm commitment for simulation equipment. But at least one such decision was reportedly imminent.

All proposals have the same general characteristics. In addition to differences in price, the systems do incorporate variations in the application of the computer and in the visual equipment.

Railroads most interested in the simulators at present have indicated their desire to take the necessary color movie which would be the basis for the visual system. Producers of the simulators are prepared to do this photography if a railroad is not able to do it.

What railroads are hoping to produce are enginemen fully versed in not only optimum train handling but in meeting emergency stituations. Spacecraft simulators have been made so realistic that one astronaut, returning from a rendezvous and docking mission in outer space, was heard to say: "It was just like doing it in the simulator." ■

39TH ANNUAL MEETING

MECHANICAL DIVISION

ASSOCIATION OF AMERICAN RAILROADS

The 39th annual meeting of the AAR Mechanical Division will be held in the Grand Ballroom of the Sherman House, Chicago, on June 26 and 27. Reports will be summarized by the committee chairmen preliminary to questions about the various technical topics.

Wednesday, June 26
9:00 a.m.

Address—T. M. Goodfellow, president, Association of American Railroads.
Address—Chairman T. T. Blickle, general manager—mechanical department, Santa Fe.
Address—W. M. Keller, vice president, research department, AAR.
Reports—General Committee, Nominating Committee, Locomotives and Locomotive Fuels and Lubricants, Wheels and Axles, Specifications for Materials, Tank Cars, Freight and Passenger Car Construction, Safety Appliances.

Thursday, June 27
9:00 a.m.

Address—Mac E. Rogers, director, Bureau of Railroad Safety, Federal Railroad Administration, Department of Transportation.
Address—R. R. Manion, vice president, Operations and Maintenance Department, AAR.
Reports—Arbitration, Prices for Labor and Materials, Journal Roller Bearings, Loading Rules, Brakes and Brake Equipment, Couplers and Draft Gears, Lubrication of Cars and Locomotives.
Election—General Committee members.

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PEOPLE IN THE NEWS

CANADIAN NATIONAL.—**Dr. Robert A. Bandeen,** director of corporate planning, Montreal, appointed vice president, corporate planning and finance, a new position.

D. L. Stenberg, assistant engineer, maintenance of way, Prairie Region, appointed area engineer, Assiniboine Area, with headquarters as before at Winnipeg, succeeding **H. E. Amos,** retired.

R. Rotter, assistant engineer of tests, appointed engineer of production, system, Montreal.

B. Williams, superintendent, Toronto Yard, appointed coordinator—freight service development, Montreal, succeeding **J. A. Clark,** promoted.

CANADIAN PACIFIC.—**V. G. Smart,** assistant chief of transportation (car service), Montreal, appointed director of training (car service). **F. B. Spencer,** superintendent car service, named assistant chief of transportation. **E. Barlow,** assistant superintendent car service, promoted to superintendent of car service. **R. W. Fallow,** system supervisor car service, named assistant superintendent of car service.

S. A. Kerr, assistant manager—freight rates, Prairie Region, Winnipeg, retired May 31, after 45 years of service. **F. J. Hamon,** assistant manager freight rates, Winnipeg, promoted to manager—freight rates there. **J. E. Graham** and **H. Whitely** appointed assistant managers—freight rates.

FRISCO.—**L. C. Marsh,** district sales manager, Buffalo, N.Y., transferred to Blytheville, Ark., succeeding **W. J. Johnston,** who retired May 31. **G. H. Miller,** traffic representative, Buffalo, named to succeed Mr. Marsh.

GREAT NORTHERN.—**Jean A. Lehn,** trainmaster, Kelly Lake, Minn., named supervisor of yard operations, Gavin Yard, Minot, N.D., to succeed **Paul H. Johns,** who retires June 30 after 43 years' service. **M. L. Purdy,** trainmaster, Superior, Wis., succeeds Mr. Lehn, and in turn is replaced by **T. G. Hooker,** transferred from Devils Lake, N.D. **William B. Fleisher** appointed trainmaster, Grand Forks, N.D.

ILLINOIS CENTRAL.—**Sylvester G. Bucher,** auditor of disbursements, retired May 31 after 45 years of service. **William R. Sims** appointed manager, disbursement accounting, and **Theodore R. Shackelford,** assistant manager, disbursement accounting. **Jack W. Graves** named manager, revenue accounting. **Daniel T. Kelly** becomes senior assistant manager, revenue accounting.

KANSAS CITY SOUTHERN.—**C. W. Wardlaw** named assistant to vice president-traffic, Kansas City, Mo. **John T. Garrigues,** general agent, Kansas City, advanced to district freight agent there. **John C. Walker,** general agent, Tulsa, Okla., replaces Mr. Garrigues, and in turn is replaced by **James N. Kyzar. A. J. DeLaune** named manager of special services, truck and TOFC sales, Shreveport, La.

LONG ISLAND.—**Arthur T. Van Wart** named director of personnel relations. Mr. Van Wart was formerly director of labor relations, **New York Central.**

Ronald C. Kane named assistant director of public relations, Jamaica, succeeding **Paul A. Blauvelt,** promoted to director of safety (RA, May 13, p. 49).

MILITARY TRAFFIC MANAGEMENT & TERMINAL SERVICES.—**Lieut. Col. Ian M. Phillips, Jr.,** named assistant executive officer, Commander's Office, Baileys Crossroads, Va. Col. Phillips was formerly chief, Resources Management Division, Directorate of Transportation, First Logistical Command, Vietnam.

MILWAUKEE.—**John Lucchesi,** district representative, rail-highway sales, Chicago, transferred to Minneapolis.

MISSOURI-KANSAS-TEXAS.—**Andrew H. Younger,** sales manager, New York, transferred to St. Louis, to succeed **Fred J. Fuerst,** retired. **Raymond E. Boismenue,** sales representative, St. Louis, named to the newly created position of assistant sales manager there. **Fred R. Grimes,** assistant sales manager, New York, named sales manager there, succeeding Mr. Younger. **John G. Hastings,** sales manager, Philadelphia, advanced to succeed Mr. Grimes. Mr. Hasting's successor is **Edward J. Weichers,** sales manager, Indianapolis, who in turn is succeeded by **Ralph C. Collins,** sales representative, Houston. **William H. Wiley** named vice president and general manager, **Missouri, Kansas & Texas Transportation Co.** and the **Coordinated Transportation Co.,** wholly-owned subsidiaries of the railroad, with headquarters at Dallas.

MISSOURI PACIFIC-TEXAS & PACIFIC.—**J. H. Lloyd** elected executive vice president. **W. J. Herold** elected assistant secretary.

NORFOLK & WESTERN.—**B. A. Moorhead** appointed traffic manager, COFC highway sales, Roanoke, Va. Mr. Moorhead formerly was assistant director, Flexi-Van sales and services, **New York Central,** New York.

James L. Spencer named manager special services, Roanoke. **Clark H. Hale, Jr.,** chief traveling agent, succeeds Mr. Spencer as supervisor transportation-system.

NORTHERN PACIFIC.—**D. J. Wigstrom,** assistant comptroller, named comptroller, to succeed **Earl L. Ordell,** who retired May 31.

PENN CENTRAL.—Organization of headquarters staff for the Purchases and Materials Department is as follows: **M. P. Richards,** vice president-purchases and materials; **J. S. Fair, Jr.,** assistant vice president-purchases; **J. A. Smith,** director-purchases; **T. E. Aiken,** purchasing agent-diesel electric and electric locomotives; **L. S. Atkinson,** purchasing agent-electric and non-ferrous; **V. W. Didcoct,** purchasing agent-Despatch Shops, Inc.; **E. J. Gentsch,** purchasing agent-new equipment, field buying, purchasing analysis; **G. E. Hargreaves,** purchasing agent-energy and chemicals; **G. J. Hoffman,** purchasing agent-steel products; **J. P. Sherron,** purchasing agent-forest products, stationery and hotels; **F. A. Zimmerman,** director-materials; **J. J. Brown,** assistant director-materials-system; **H. R. Cory,** assistant director-materials-car; **W. H. Krapf,** assistant director-materials-Altoona; **K. E. Lowe,** assistant director-materials-locomotives; **H. L. Riser,** assistant director-materials-M of W; **Evan Russell,** assistant director-materials-M of W; **J. A. Angert,** manager-purchases and materials administration. **Ralph W. Friedel,** director of stores, and **W. J. Balsden,** special equipment agent, retired May 31. Each had served for 44 years. **Robert J. Slater,** superintendent, Ohio Central Division, transferred to the Toledo Division, Toledo, Ohio, to succeed

R. W. Dills
Santa Fe

Michael J. Tapner
TAA

J. Robert Clark, named district engineer, Northeast Region, Syracuse, N.Y.

ROCK ISLAND.—In the Data Systems Department, **H. R. Ingemansen** named manager of systems development-revenue accounting; **W. E. Schott,** manager of systems development-transportation and traffic reporting; **T. M. Walsh,** manager of systems development-car services.

Paul E. LaCosse appointed labor relations officer. He was formerly assistant director of personnel, **Soo Line.**

SANTA FE.—**R. W. Dills** named vice president, **Santa Fe Trail Transportation Co.** and general manager, department of highway motor transport for the railway, to succeed **W. A. Gammon,** who retired May 31 after more than 39 years of service. **Malcolm O. Strom,** general agent, passenger department, retired May 31 after more than 40 years' service.

SOUTHERN PACIFIC.—**C. M. Bill** named to the new position of assistant general auditor, with jurisdiction over income tax matters.

TRANSPORTATION ASSOCIATION OF AMERICA.—**Michael J. Tapner,** special representative, News Service Department, **Association of American Railroads,** appointed director, public information and education, TAA, Washington, D.C.

WESTERN MARYLAND.—**M. S. Ronald Watkins** appointed manager divisions bureau, Baltimore, succeeding **Roland M. Hampe,** who retired May 31.

DIVIDENDS DECLARED

ATCHISON, TOPEKA & SANTA FE.—Preferred, 25¢, semiannual, payable Aug. 1 to holders of record June 28.

CANADA SOUTHERN.—$1.50, semiannual, payable Aug. 1 to holders of record July 15.

CANADIAN PACIFIC.—$1.50, increased, semiannual, payable Aug. 1 to holders of record June 25.

GULF, MOBILE & OHIO.—65¢, quarterly, paid June 10 to holders of record May 22; Preferred, $1.25, quarterly, payable Dec. 16 to holders of record Nov. 26.

KANSAS CITY SOUTHERN.—Preferred, 25¢, quarterly, payable July 15 to holders of record June 28.

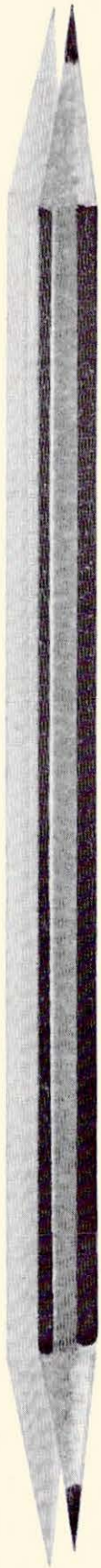
PIEDMONT & NORTHERN.—60¢, quarterly, payable July 20 to holders of record July 5.

PITTSBURGH & LAKE ERIE.—$1.50, quarterly, payable July 15 to holders of record June 28.

PITTSBURGH, FORT WAYNE & CHICAGO.—Preferred, $1.75, quarterly, payable July 2 to holders of record June 10.

RICHMOND, FREDERICKSBURG & POTOMAC.—$1.50, quarterly; 6% guaranteed, $1.50, extra; 7% guaranteed, $1.25, all payable July 12 to holders of record July 1.

The college contribution



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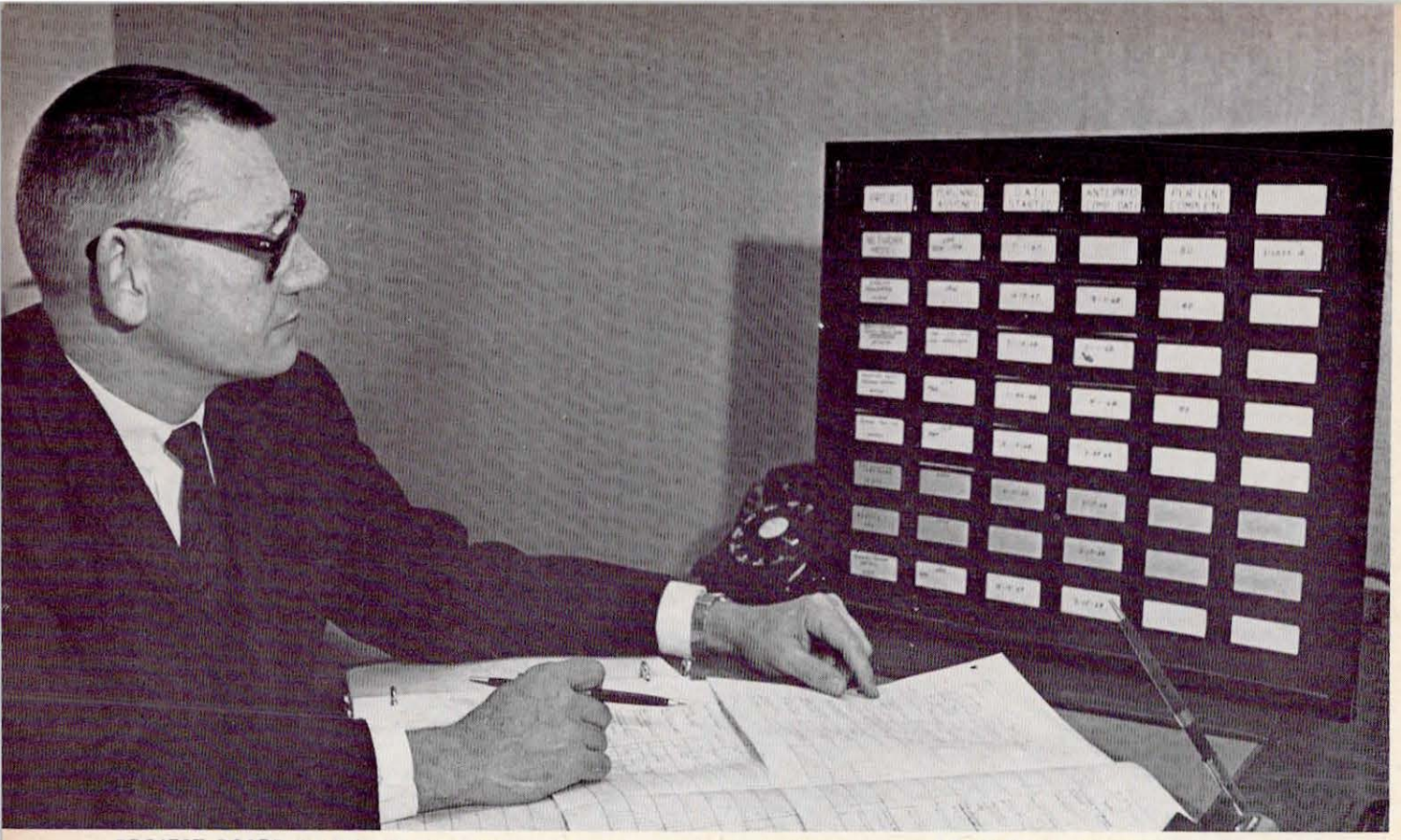
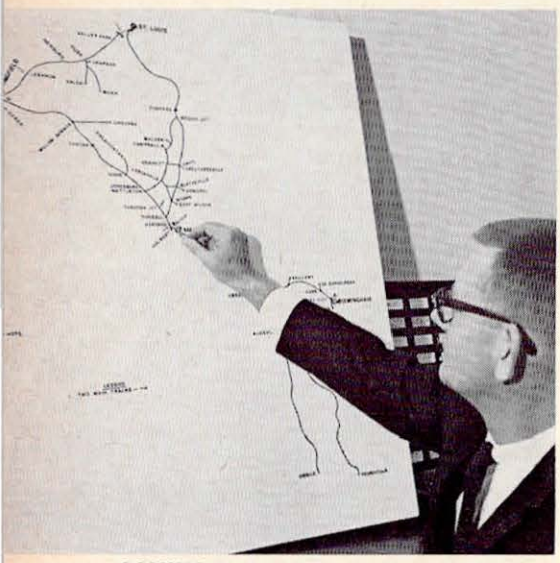


PROJECT BOARD for Frisco's industrial engineers is running out of space, says J.A. Bellman, manager-industrial engineering.

Frisco's industrial engineers have big computer plans



COMING PROBLEM is a common one for U.S. railroads today: Where on the system should ACI scanners be located to provide maximum coverage and benefits?

Increasing the speed of freight trains is one of the major goals.

Nobody was pacing the floor, nobody nervously chain-smoked, nobody needed tranquilizers. Still, there was a certain expectant-father air to Frisco's industrial engineering department a few weeks ago, as a CDC/6400 computer gave life to the engineers' baby, the railroad network model which may grow up to be a force in railroad management's decision-making processes.

The operation was a success—and Frisco is moving now to the stage where the model, a proven thing, can start feeding its masters the kind of data needed to eliminate some of the uncertainties involved in railroad planning.

A lot has happened since J. A. Bellman, manager-industrial engineering, and his staff began test-running the model about a year ago (RA, April 17, 1967, p. 16). Then, the model covered five major terminals—St. Louis, Springfield, Mo., Tulsa, Kansas City and Memphis—and the lines of road connecting them. Twenty-five so-called keypoints were included, and provision was made for simulated operation of 51 scheduled trains.

But there were problems. As Jack Bellman puts it, "traffic tended to disappear when it went into a terminal. We were unable to recognize all traffic moving intermediate."

● **Building a bigger model.** So the IE group went back to work. The model was extended to cover the entire railroad. Model size was increased to handle traffic effect on 70 locations, and to provide capability for simulating the running of 65-plus trains in a 24-hour period.

Using the Control Data computer at McDonnell-Douglas Corp. in St. Louis, Frisco people poked and prodded at the model. And it came up clean: "We've validated the model, based on computer runs which in turn are based on actual operation. We found it would work. Now, we know we can get valid results when we put in the 'if' situations."

The tests of a few weeks ago were essentially computer runs to show the effects of possible changes in scheduling and blocking policies and in routing. Next up was a post-analysis pro-

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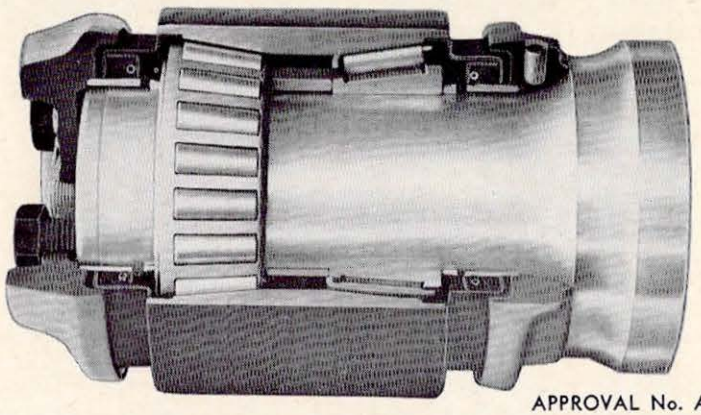

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gram to be completed and run at McDonnell-Douglas. In mid-May, Bellman presented the model and the outcome of the runs to top Frisco management for its decision on further development.

• **Evaluation and planning.** The model, as Bellman sees it, "should be a tool in service evaluation and planning, as well as a device for use by the general superintendent-transportation and his people. They say what 'if' factors they want included. Our function is to put the data in format and run the program. We give the output data back to the transportation people, and it's up to them to evaluate it in terms of what they're trying to accomplish."

The network model, he adds, "is in shape now so that the transportation department can really test its ideas and evaluate the effect of proposed changes. Naturally, we're hoping that with our successful run, people will want us to keep on with the developmental work, both on the network model and the terminal model."

(In the network model, the industrial engineers point out, certain fixed times for yard activities are assumed. In the terminal model, there is an in-depth examination of all activities and traffic priorities, considering facilities, capacities and resources in terms of manpower and equipment.)

In the recent test program, simulation was used to determine patterns which might be created through various run-through train operations and changes in blocking patterns. One of the purposes of the model has been to check the feasibility of making yard changes at specific locations. So, in the CDC/6400 run, Frisco assumed existence of these new or changed facilities and then examined the blocking policies that could be followed to expedite traffic and avoid double-humping.

The model, Bellman points out, "is set up so that if we want to test preblocking at a given terminal, we can feed in the assumption and see the interactions, good and bad, that might develop at any terminal along the traffic's route."

• **Exploring alternatives.** In this way, the road can get a clearer picture of what happens if the yard changes are made, what changes might be advisable elsewhere on the system if suggested alterations are not made, or what revisions in operating practices might improve traffic flow under either set of circumstances. As just one example: Would Frisco be farther ahead, with or without yard revisions, to hold traffic longer at origin point under certain conditions in order to set up run-through operations which would bypass intermediate terminals and thus possibly produce a net savings in transit time?

While the network and terminal models are holding prime-time attention from Frisco's IE group, however, they are not the only projects getting emphasis. Bellman sees other simulation opportunities in such areas as motive-power utilization and distribution. He is now trying to determine where Frisco should install ACI scanners. His group is six-months deep in a train-accident analysis, with about six months' more work yet to go. The industrial-engineering approach is being applied in such other diverse areas as the handling of company materials, the updating of the road's perpetual-inventory car-location system, the operation of roadway equipment and shop facilities. And industrial engineers are looking at engine failures, joint train-yard operations, journal failures and diesel facilities.

Most of the projects are listed—with notations as to personnel assigned, date started, anticipated completion date and percentage-of-completion—on a home-made project board in Bellman's office.

And he needs a bigger board. ■

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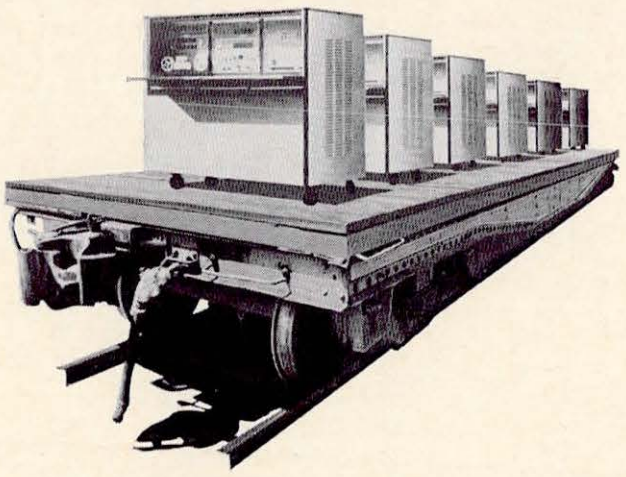

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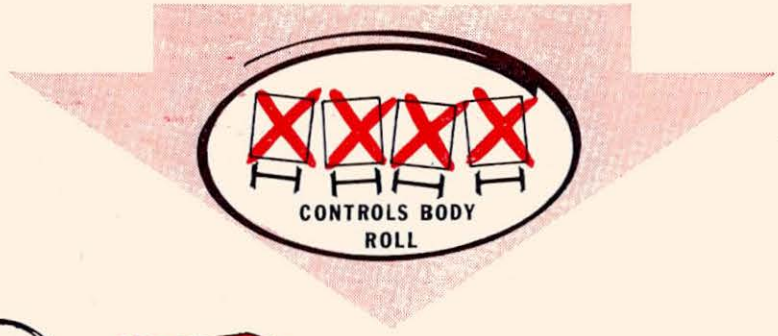

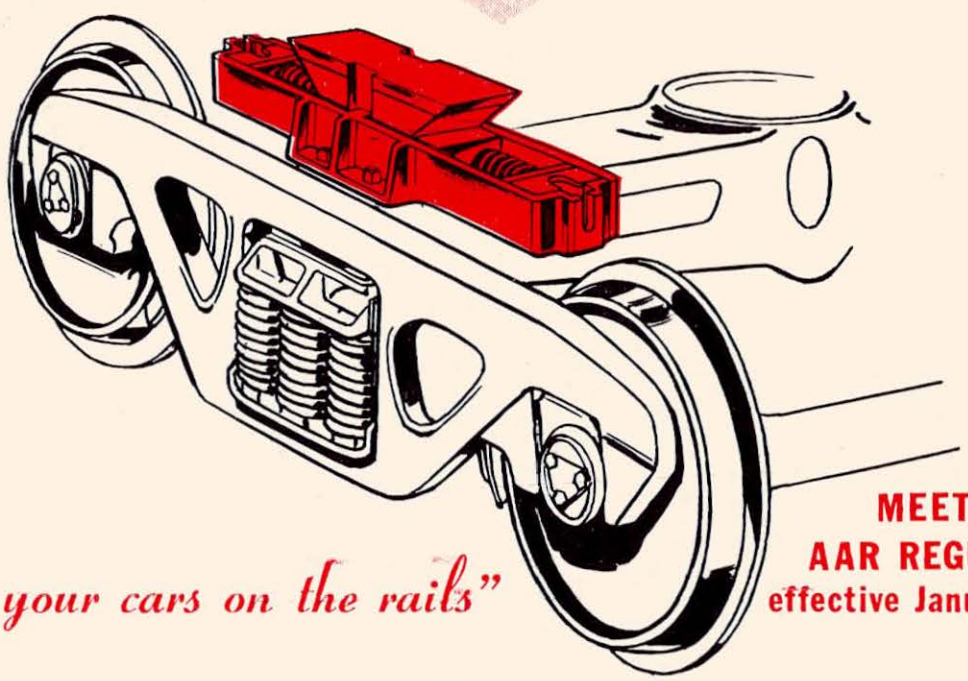

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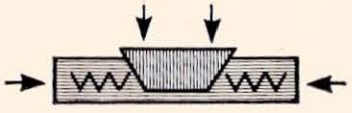

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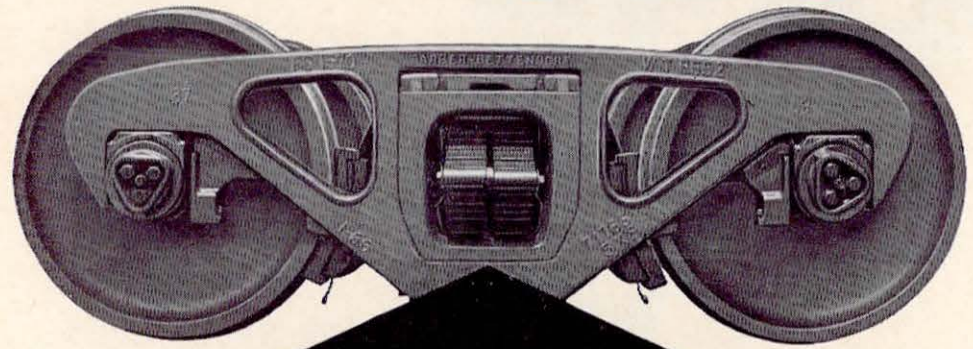

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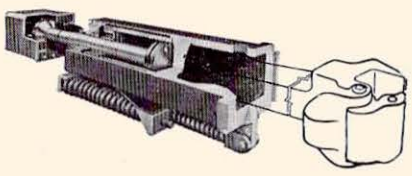

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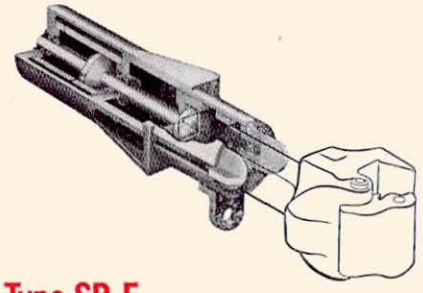

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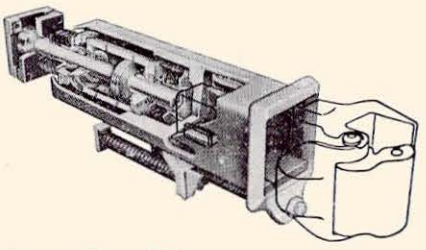

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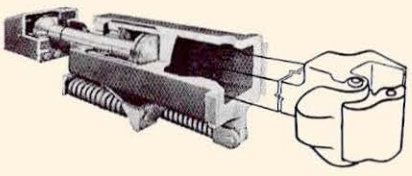

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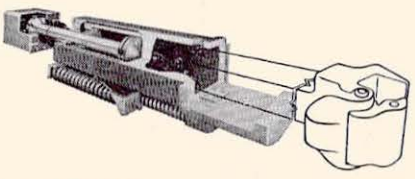

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Circle 39 on coupon page 70

Loading rules are approved

(*Continued from page 40*)

ing are obvious and the benefits to our industry are too great to jeopardize this method of loading by an unwillingness to comply with prescribed standards for loading and securement."

● **Key word is cooperation.** "The Western lumber industry," Manning continued, "enjoys a fine relationship with the Mechanical Division of the AAR. Over the years we have worked very closely with the AAR Loading Rules Committee in a spirit of cooperation to develop rules that are as economical as possible and at the same time result in safe loads.

"Through this spirit of cooperation, we have arrived at an understanding with the AAR that no changes will be made in connection with the forest products loading rules without prior discussion with industry representatives. This has led to a better understanding on the part of both our industries as to the problems involved.

"Based on our experience," Manning concluded, "I would certainly recommend to any industry that is experiencing troubles with its loading rules that they approach the matter in a spirit of cooperation with the AAR. I am sure that the results will be well worth the effort."

● **Improved equipment wanted.** Among Poll respondents who said AAR loading standards penalize shippers unduly was Miles F. Tamisiea, general traffic manager, Theo. Hamm Brewing Co., St. Paul, Minn.

"To load a rail box car entails a great expense to the shipper," Tamisiea wrote. "Though I believe we should abide by the AAR loading rules, the carriers should be developing new, improved equipment in which to load our freight.

"The cushion underframe car was a big improvement and I feel sure the railroads gained back a large volume of freight which was previously lost to them. If the carriers can improve their loading equipment, the strict AAR loading rules could then be relaxed. The railroads claim, and rightfully so, that the cushion underframe cars are expensive, at least from an investment standpoint. I believe, however, in the final analysis the cars save them thousands of dollars in L&D claims."

H. D. Barnard, traffic manager, Diamond Fruit Growers, Inc., Hood River, Ore., also expressed a belief that the loading rules are costly to shippers.

"The rules as set up are necessary under present conditions," he said, "but the railroads do very little to eliminate the cause of damage—rough handling in transit."

R. E. Covey, general traffic manager, American Sugar Co., New York City, said that "damage on carloads conforming to 'loading rules' runs 10 times as high as shipments by motor vehicles. All products are packaged to the higher and more expensive standard required for rail shipping, although more substantial economies would be possible using the more economical packaging satisfactory for truck shipping.

"Rail damage," he added, "is frequently caused by interior car condition. Claim agents frequently disclaim liability for all damage, blaming noncompliance with loading rules.

"Loading rules were established when standard switching speeds were 3-4 miles per hour. Our current normal impacts are frequently double that intensity at the present time. Current railroad operating practices have outgrown both the equipment and the loading rules, in many instances." ■

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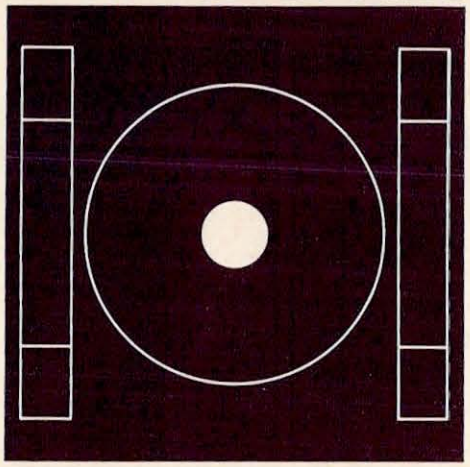

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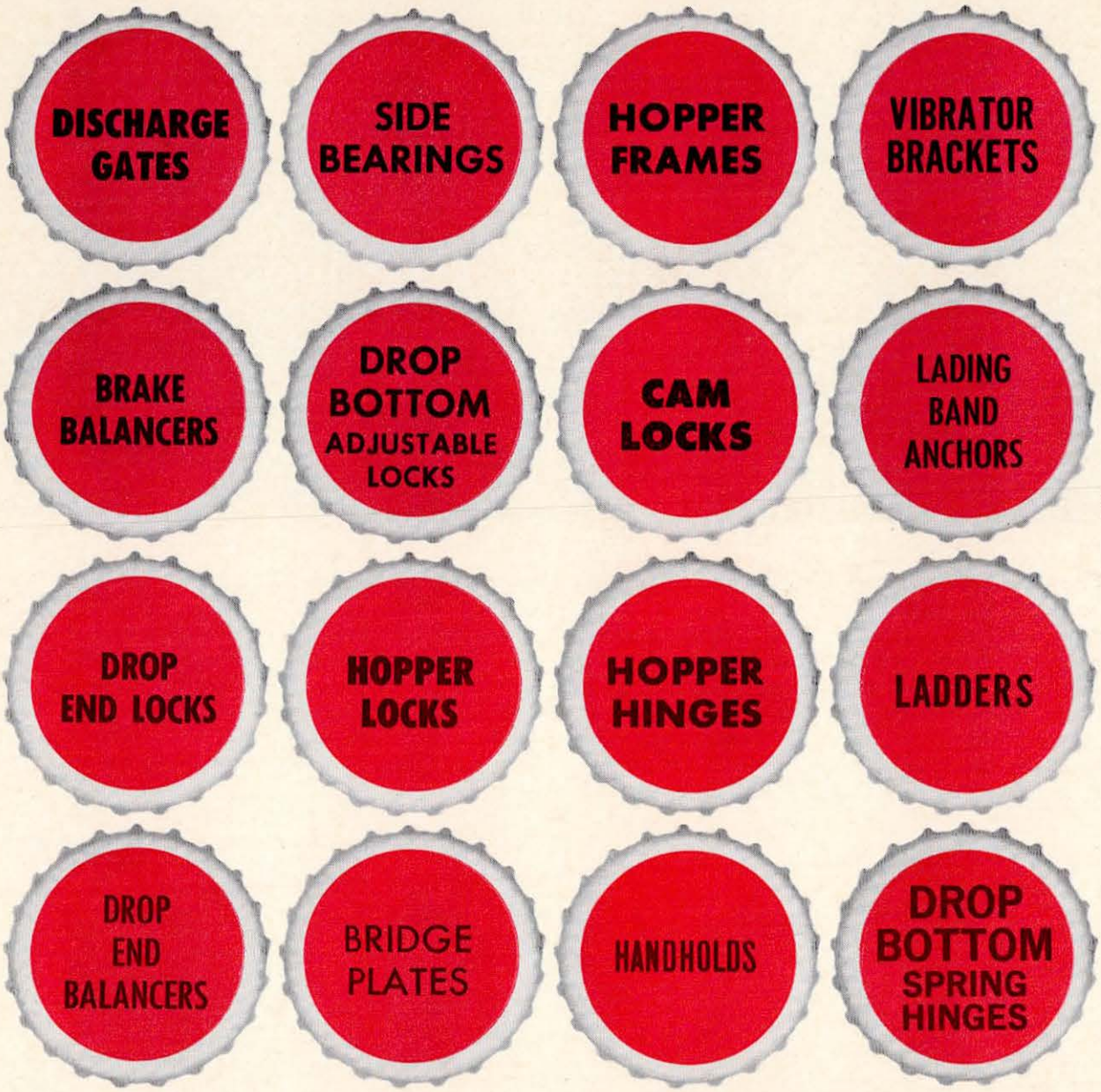

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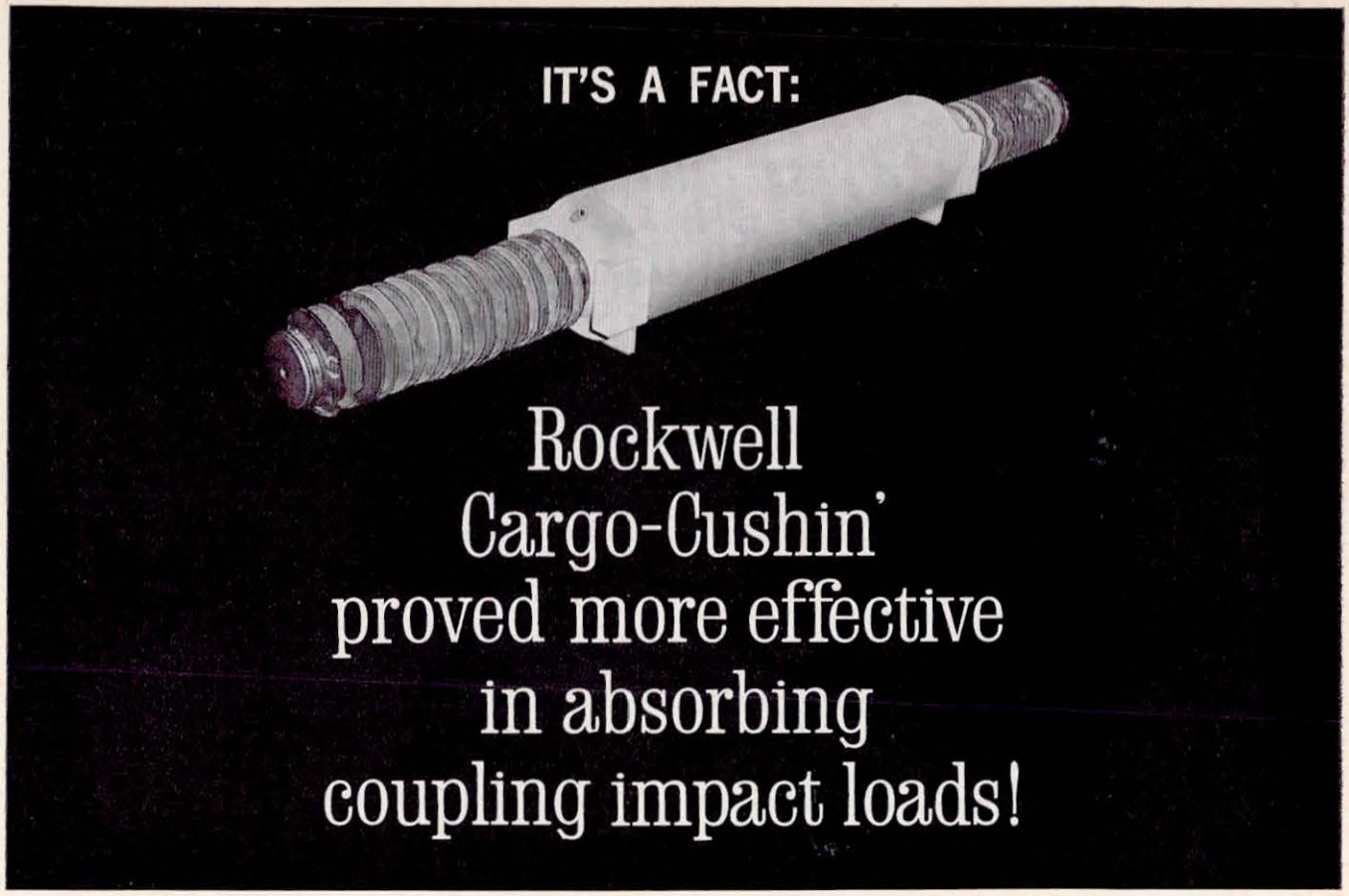

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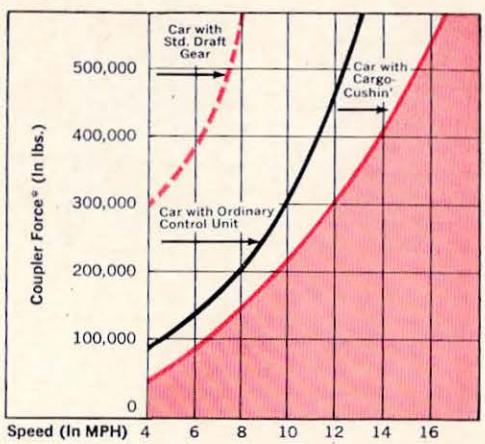

Run No.	With Cargo Cushin'		With Ordinary Control Unit		Car with Standard Draft Gear	
	Impact Speed MPH	Max. Force at Impact (Lbs.)	Impact Speed (MPH)	Max. Force at Impact (Lbs.)	Impact Speed (MPH)	Max. Force at Impact (Lbs.)
1	4.17	39,000	4.1	96,000	4.2	310,000
2	6.54	91,000	6.4	180,000	6.5	430,000
3	8.00	136,000	8.5	195,000	8.0	600,000
4	9.95	214,000	10.3	322,000	9.2	980,000
5	11.60	292,000	11.7	480,000	—	—
6	12.72	337,000	12.2	476,000	—	—
7	14.19	425,000	13.0	575,000	—	—

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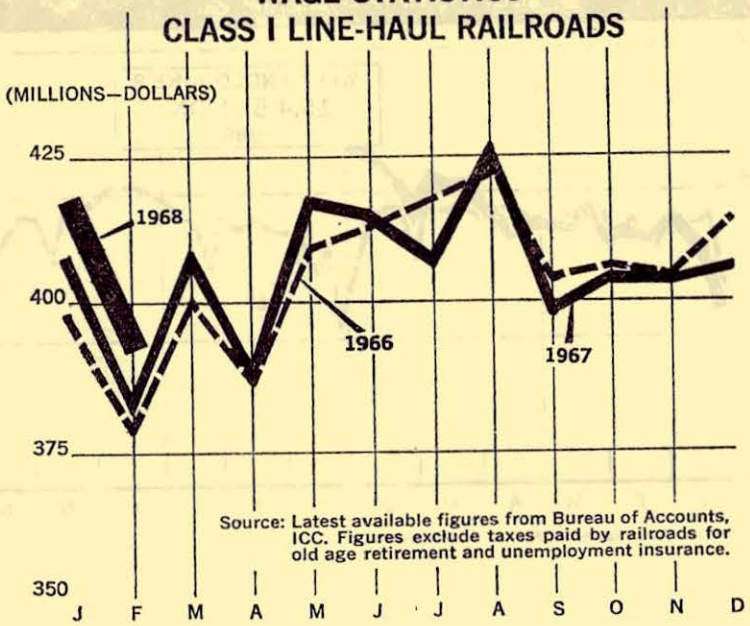
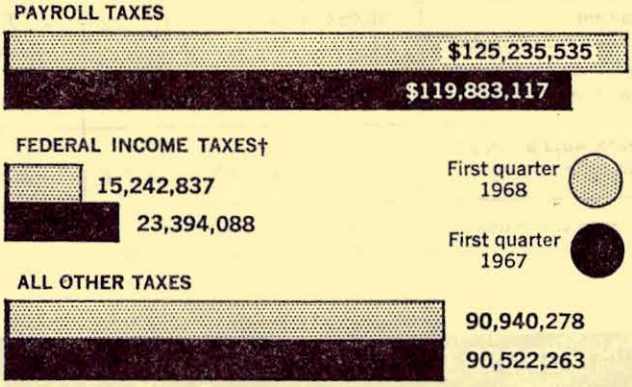
WAGE STATISTICS
CLASS I LINE-HAUL RAILROADS



Source: Latest available figures from Bureau of Accounts, ICC. Figures exclude taxes paid by railroads for old age retirement and unemployment insurance.

RAILROAD TAXES*



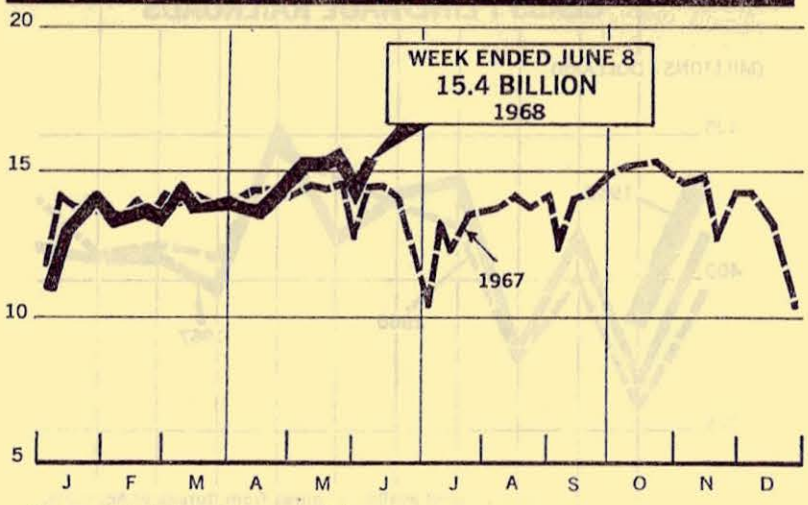
*Compiled from revenues and expenses reports of 77 Class I railroads.
†Includes income tax, surtax and excess profits tax.
Source: Bureau of Accounts, ICC.

Current statistics

Carloadings, revenue freight	
24 wks., 1968	12,853,099
24 wks., 1967	12,931,458
New freight cars on order	
May 1, 1968	20,364
May 1, 1967	34,960
New freight cars delivered	
4 mos., 1968	21,953
4 mos., 1967	32,785
Serviceable cars	
May 1, 1968	1,398,772
May 1, 1967	1,422,886

RAIL FREIGHT TRAFFIC TRENDS

BILLION TON-MILES (Estimated)



Source: Association of American Railroads

SHIPMENTS OF RAILROAD STEEL PRODUCTS

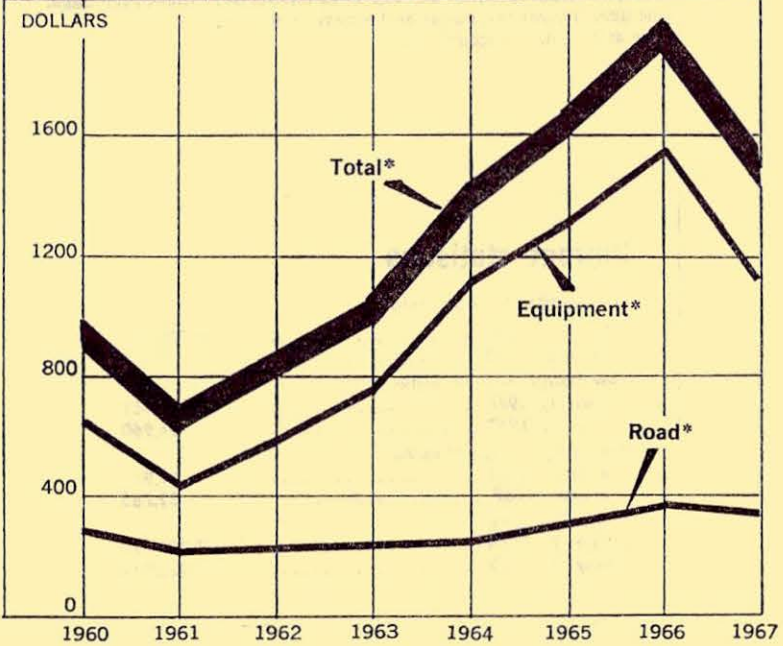
(APRIL AND FIRST FOUR MONTHS 1968)

	NET TONS			
	April	Per Cent Change*	Four Months	Per Cent Change*
Rails, trackwork and equipment	96,054	— 14.1	380,522	— 7.7
Freight and passenger cars and locomotives	189,393	— 6.6	763,401	—13.8
Street railways and rapid transit systems	7,271	+182.0	20,736	+50.4

Source: American Iron and Steel Institute.
*Per cent change compares 1968 periods with like 1967 periods.

GROSS CAPITAL EXPENDITURES

(Class I railroads)



*Totals in millions. Source: Bureau of Economics, ICC.

MARKET OUTLOOK

CARLOADINGS

Loadings of revenue freight in the week ended June 15 totaled 590,880 cars, the Association of American Railroads announced on June 20. This was an increase of 5,766 cars, or 1.0%, compared with the previous week; an increase of 20,097 cars, or 3.5%, compared with the corresponding week last year; and a decrease of 34,433 cars, or 5.5%, compared with the equivalent 1966 week. Ton-miles generated by carloadings in the week ended June 15 are estimated at 15.6 billion, an increase of 8.3% above the corresponding week of 1967, and 0.3% above the 1966 week.

REVENUE FREIGHT CARLOADINGS

For the week ended Saturday, June 15

District	1968	1967	1966
Eastern, including Allegheny and Pocahontas ..	234,126	229,843	248,443
Southern	123,048	115,232	117,177
Total Eastern and Southern Districts	357,174	345,075	365,620
Northwestern .	81,042	78,055	93,599
Central Western	111,224	106,681	123,775
Southwestern .	41,440	40,972	42,319
Total Western Districts	233,706	225,708	259,693
Total All Roads	590,880	570,783	625,313
Commodities:			
Grain and Grain Products	42,625	46,182	61,563
Livestock	915	965	1,208
Coal	112,012	116,309	121,912
Coke	8,363	7,440	8,644
Forest Products	41,467	40,415	41,054
Ore	56,082	53,907	61,285
Merchandise l.c.l.	3,794	4,831	6,390
Miscellaneous .	325,619	300,734	323,257
June 15	590,880	570,783	625,313
June 8	585,114	577,225	621,155
June 1	528,028	508,845	547,685
May 25	589,217	573,428	611,744
May 18	580,603	571,343	609,325
Cumulative total, 24 weeks ...	12,853,099	12,931,458	13,447,480
Estimated revenue ton-miles (billions) 24 weeks ...	346.0	334.2	338.8

PIGGYBACK CARLOADINGS

U. S. piggyback loadings for the week ended June 8 totaled 25,603 cars, carrying 40,951 trailers, compared with 22,470 cars, carrying 36,906 trailers, in the corresponding 1967 week. Loadings for 1968 up to June 8 totaled 570,796 cars, carrying 923,092 trailers, compared with 514,560 cars, carrying 846,235 trailers, in the corresponding period of 1967.

IN CANADA

Carloadings for the ten-day period ended May 31 totaled 122,919 cars, compared with 71,107 for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd. from Connections
Totals for Canada		
May 31, 1968.....	122,919	34,069
May 31, 1967.....	117,534	36,457
Cumulative Totals		
May 31, 1968.....	1,512,654	523,148
May 31, 1967.....	1,542,167	542,027

LOCOMOTIVES

• *Seaboard Coast Line.*—Ordered 27 new high horsepower diesel locomotives at a cost of more than $7 million. The order includes 13 3,300-hp U33B units to be built by General Electric for delivery in first quarter 1969, and 14 3,600-hp SD-45 locomotives to be built by EMD for October delivery.

NEW FACILITIES

• *Chicago Transit Authority.*—Air conditioning systems for 150 rapid transit cars, being built for CTA by the Budd Co., will be supplied by Safety Electrical Equipment Corp. of New Haven, Conn.

• *Cleveland Transit System.*—Ordered 80 radio receiving and transmitting units from General Electric for installation on rapid transit cars. The rail communications system will go into service when CTS completes installation of radio units on the bus fleet this summer.

• *Milwaukee.*—Ordered radar speed-control and weight-information equipment worth $54,000 from the Signal & Communications Division of WABCO for late-1968 installation on the master retarder at Bensenville (Chicago) Yard.

• *New York City Transit Authority.*—Has awarded a $4 million contract to the Signal & Communications Division of WABCO for complete renovation of all signaling and interlocking equipment on the IRT (Interurban Rapid Transit) on the Lenox Avenue line between 96th and 145th Streets. The work also includes replacement of present signaling and switch movements and the addition of new equipment, such as equipment racks located in new relay rooms, central instrument houses, instrument cases, wayside phone and electropneumatic trip stop layouts. Control of interlocking functions will be handled from a console located at the Lenox Avenue yard. The console will include an illuminated miniature track diagram to indicate the progress and position of all trains in the area from 95th St. to the Lenox yard.

• *Penn Central.*—The Department of Transportation and the State of Delaware will jointly spend $80,000 to improve conditions at four grade crossings on the line to be used by the high-speed trains in the Washington-New York demonstration project. The work will be done in the vicinity of Newark, Del. A similar $330,000 joint project between DOT and the State of Maryland involved 16 grade crossings.

• *Seaboard Coast Line.*—Ordered, through McDowell-Wellman Engineering Co., a retarder from the Signal & Communications Division of WABCO for installation on a phosphate dumping site at Tampa, Fla.

YOU OUGHT TO KNOW

Congress moving to extend time for high-speed project

The Surface Transportation Subcommittee of the Senate Commerce Committee has scheduled hearings for July 16 on pending bill S. 3237 to extend the Department of Transportation's High-Speed Ground Transportaton Program for an additional two years. The program includes the Northeast Corridor demonstrations of fast rail service between Washington and New York and New York and Boston. On the House side a companion bill, H.R. 16024, was cleared last week by the House Interstate Committee's Subcommittee on Transportation.

Martin heads railroad PR group for 1968-69

Donald T. Martin, assistant vice president, Seaboard Coast Line, is the new president of the Railroad Public Relations Association, succeeding Peyton B. Winfree, Jr., director of public relations, and advertising, Norfolk & Western. Regional vice presidents for RPRA for 1968-69 are C. C. Dilley, director of public relations and advertising, Milwaukee; U. W. Cunitz, director—public relations, Penn Central, and W. F. Geeslin, assistant to the president—public relations and advertising, Southern.

ICC keeps SP "Sunset" on for four months

The Southern Pacific's "Sunset" will remain in operation for at least four months from June 7. That's the immediate effect of an ICC order instituting an investigation of SP's proposal to drop the train which operates in both directions between Los Angeles and New Orleans. SP had posted notice of discontinuance for June 24.

Australian firm to build cars of U.S. design

Union Tank Car of Chicago, and Tulloch, Ltd., a Sydney, Australia car builder, have reached an agreement for the manufacture of railroad tank cars in Australia under licence. There are about 2,000 tank cars now in Australia, about half of which were produced by Tulloch from its own designs. The company will now have access to Union Tank's complete range of designs.

Chicago roads set the date for their merger

As of 12:01 A.M. July 1, the Chicago & North Western and the Chicago Great Western will be one railroad known as the Chicago & North Western. The plan to merge on the first of the month was announced last week by the two roads. The ICC gave the railroads permission to consolidate in the spring of 1967, but the merger was delayed because of opposition. Earlier this month the ICC reaffirmed its decision to permit the merger.

ACF's railroad car fleet gets initial change

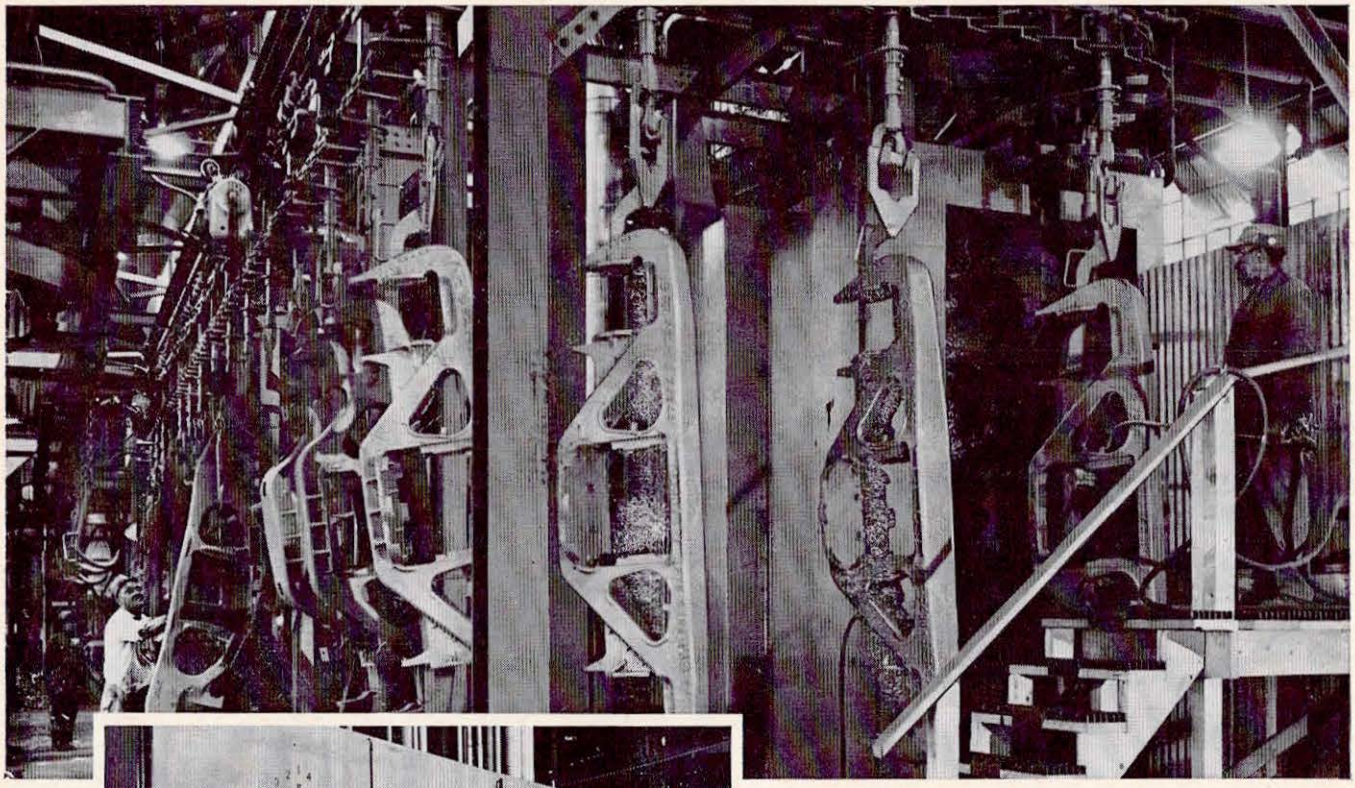
The "SHPX" reporting marks that have appeared for years on ACF's car leasing fleet won't be around much anymore. ACF, to get better corporate identification is now affixing a new reporting mark—"ACFX"—on all new cars entering the leasing fleet. Restenciling of other cars will be accomplished when they are shopped for routine maintenance. More than 28,000 cars are involved. In the photo, ACF President Henry A. Correa watches James Slaughter of the East St. Louis plant apply the new design to a tank car. At left is John S. Carlson, ACF vice president and general manager of Shippers' Car Line division, which operates the fleet.

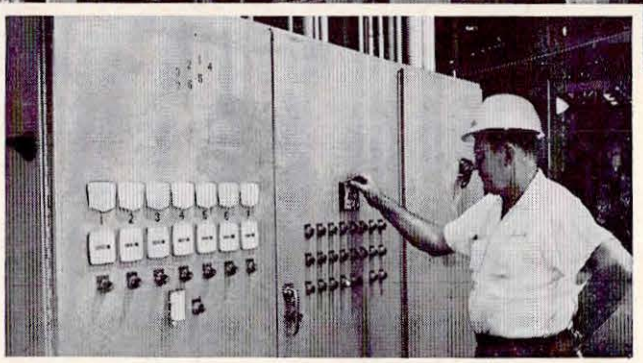
Now at Scullin there's more to shot blasting than meets the eye

We've just added the industry's newest Wheelabrator automatic shotblast installation as part of our continuing program of planned progress . . . *our endless efforts to improve our steel-casting skills!*

Unlike manual cleaning, what goes on inside the huge 70 foot shotblast cabinet is hidden from observation—but the results should be impressive. When in continuous operation, the new equipment will help us maintain a more uniform hourly rate of finishing production on freight car side frame and bolster castings. The shotblast is much more than mere automation—our customers should get cleaner castings, with a finer surface texture. This is one of the many ways you benefit from Scullin's new technologies and spirited leadership in the development of better products for railroading.

In more than 65 years of working hand and glove with railroad men, we've discovered the best way to serve is to develop new ways which make old methods obsolete. When we succeed, everybody benefits. You'll find us a good partner in *your* progress too.





Cleaning And Finishing Superintendent Frank Mataya checks shotblast control panel which regulates a total of eight automatic centrifugal shot wheels and four hydraulically-powered blast lances.

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RPI RAILWAY PROGRESS INSTITUTE

TTX aims to cut car costs

(Continued from page 37)

Train cars. The angle cock was best located on a bracket at the side of the head, because a spring-loaded carrier was required for the F-type coupler. The new AAR requirement for a 60-inch E-head coupler will permit use of a solid carrier and the relocation of the angle cock. Current costs of repairs to angle cocks, brackets, and air hoses as a result of the passing of couplers should be considerably reduced.

• **Coupler positioning.** While manual positioning of the 60-inch coupler may be difficult, other means for keeping the coupler properly positioned for automatic coupling are not without complications. Introduction of the 60-inch coupler, the need for a wider draft opening to assure curve negotiability and their 10 to 15 inches of hydraulic draft gear travel make the latest cars more susceptible to coupler passing. Such occurrences are expensive for the car owner, especially when the handling line is not held responsible.

Costly damage should be considerably reduced by installing acceptable coupler centering or positioning devices on TTX equipment. The damage resulting from coupler passing is not confined to Trailer Train; railroads owning cushioned-sill and high-cube cars with 60-inch couplers are also incurring large repair bills. Two possible solutions are:

—An AAR rule defining all coupler passing damage on freight cars as a "handling line responsibility" as presently it is for all passenger equipment;

—A less comprehensive AAR regulation establishing that coupler passing on freight cars equipped with coupler centering or positioning devices would be a handling line responsibility.

The application of centering or positioning devices is costly to a freight car owner. The advantage of such installations is in direct proportion to the total cars so equipped. Certainly such expenditures can be justified if maintenance and repair costs for long cars can be reduced.

• **Painting procedures.** Before 1961, painting of TTX cars involved the application of a prime coat on the cleaned surfaces, an enamel coat, and the stenciling. Shot-cleaning or sandblasting became a prerequisite before priming, starting in 1961. By 1964, brush stencilling was discontinued when a spray method was introduced. Repair shops are also required to follow new-car painting procedures after heavy repairs.

Because the finishing was still not completely satisfactory, a new procedure was finally developed which has been put into effect in the past few months. Each paint manufacturer has the responsibility for his product as a complete system, beginning with the prime coat on sand blasted surfaces, then the enamel coat, the spray stencilling, and two final passes of clear coat.

The clear coat is to serve as a sealant, preserving legible identification on the TTX cars for seven, eight, or ten years—these being the heavy repair cycle periods for our various classes of equipment. Although the system has yet to be proved, we are optimistic about it.

Our goal is maintenance-free equipment. Until then, Trailer Train will never be completely satisfied. As soon as one phase of a maintenance procedure is standardized, another review of systems is begun. Quality and economy are constantly balanced in our maintenance budget. ■

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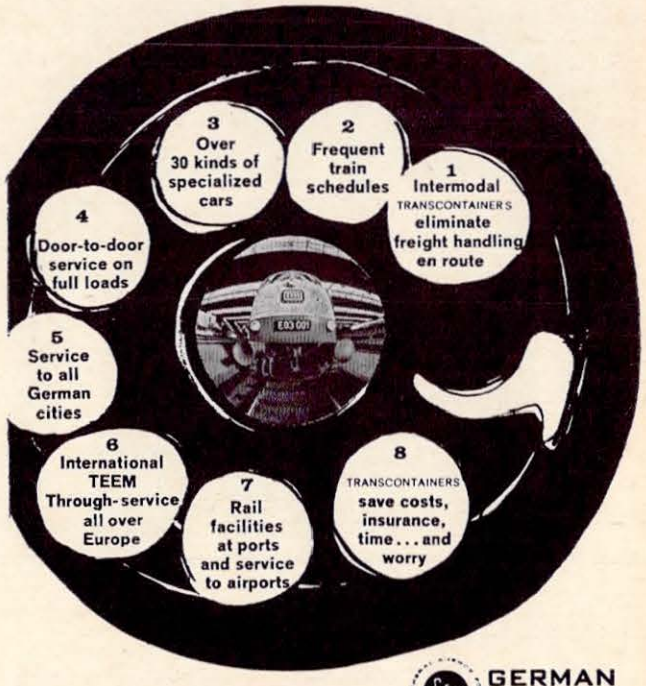
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(RA 6/24)

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VIEWPOINT

A time for words and a time for silence

A Santa Fe launches a "Super C" and it is less than an overnight success. A fellow who works for another road can hardly suppress a grin, as he recalls seeing the train pull out with a couple or three cars. Why?

An Illinois Central tries to take its story direct to its people, as a labor dispute simmers. A fellow who gets his pay check elsewhere has a certain inflection in his voice when he says. "Well, we'll just see how they make out." Why?

Two roads merge and, as it sometimes happens, there is a goof. At one recent consolidation, or so the story goes, somebody managed to lose track of a train. The fellow who tells you about it works someplace else, and you wonder if there is more than just good humor in his chuckle. Why?

It is perhaps, a natural tendency—the professors could describe it better—to find certain advantage in the other fellow's misfortune, or to feel less than sincerely sorry when somebody else dares to do something against the odds and does not quite pull it off right away. It is hardly a praiseworthy tendency, but it surfaces now and again.

This kind of rather common reaction, however, pales when it is laid alongside the outburst from Charles Luna, president of the Brotherhood of Railroad Trainmen, with regard to the operation of the train which bore the body of Senator Robert F. Kennedy on the sad journey from New York to Washington on Saturday, June 8.

Mr. Luna called it "a disgrace in the eyes of the world and an affront to the family." He said it was "miserable railroad bungling." He accused Penn Central of "mismanagement" and of presenting a "disgraceful performance."

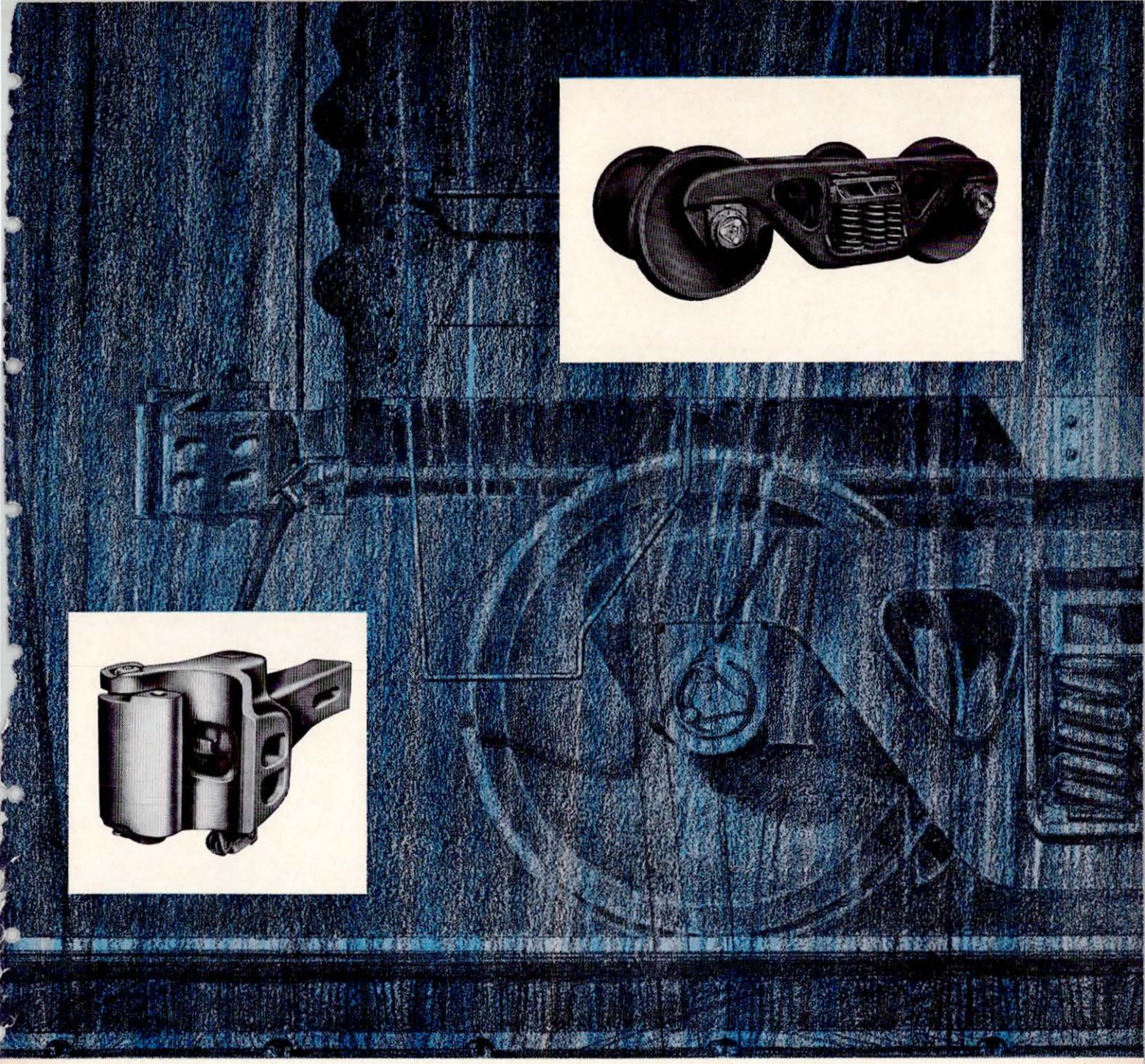
Two considerations somehow come immediately to mind. The first is taste. The second is accuracy.

Regardless of how correct Mr. Luna might have been in his assessment, his remarks seem in incredibly bad taste. They have not even the limited virtue of being self-serving to the organization which he heads.

THE BASIC CULPRIT: CIRCUMSTANCE ITSELF

The accuracy of the accusation is equally open to question. Study of the operation and the conditions under which it was conducted indicates that circumstance itself was the primary culprit in whatever evil befell the train. Arguments may go on, pro and con, as to whether circumstance could have been or should have been anticipated, and if so by whom and in what way. In some ways, this does not really matter, now. It is perhaps significant that the Kennedy family's wishes were faithfully followed by PC, and that the family has indicated no displeasure with the ways in which these wishes were carried out. It is perhaps to be remembered that this journey was not really *for* the world, though the world looked on.

Mr. Luna alone knows his thoughts. Nobody else can presume to say what Mr. Luna thinks, or why he lashed out as he did. Man attempts a great deal, when he sets out to judge another. In this instance, the temptation is strong to try. Perhaps it is sufficient merely to recall that Mr. Luna will live with what he has said.



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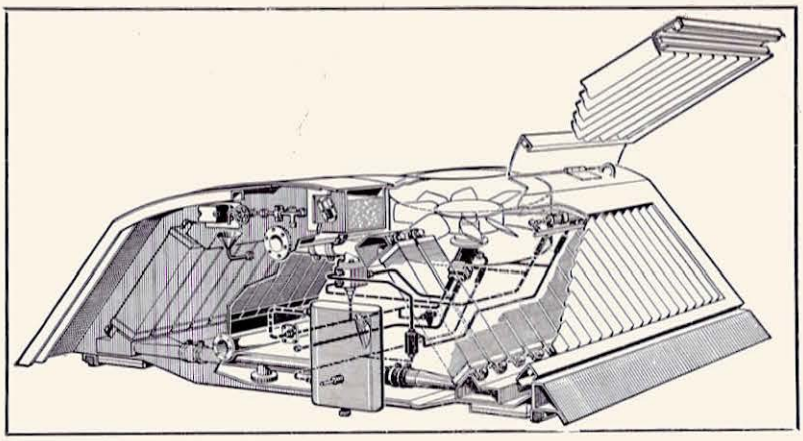

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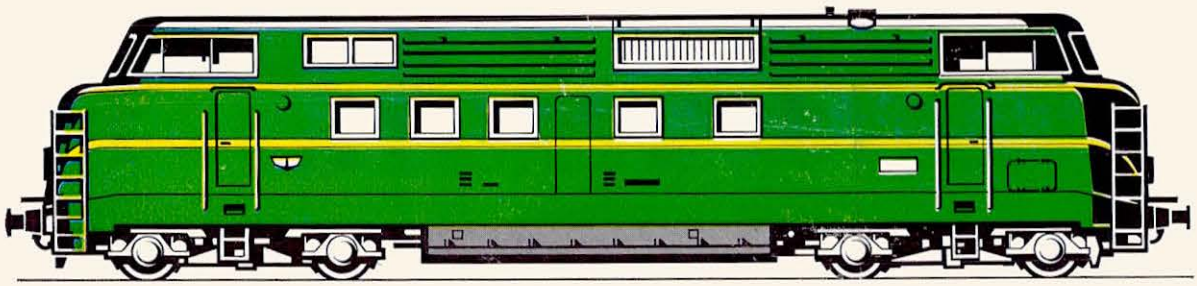

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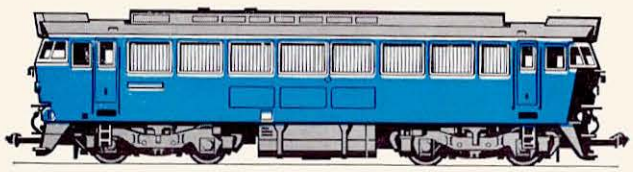

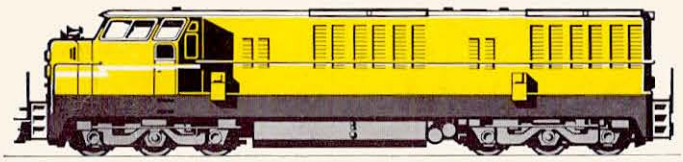

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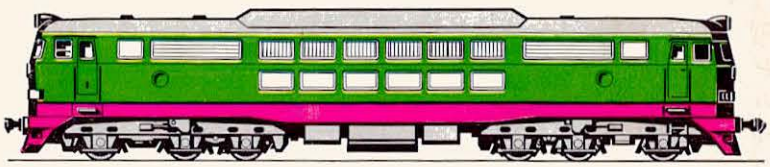

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